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What do nurses do?
a mixed-methods study of nursing work and adaptation in complex adaptive systems

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WHAT DO NURSES DO? A MIXED-METHODS STUDY OF NURSING WORK AND ADAPTATION IN COMPLEX ADAPTIVE SYSTEMS

Jennifer JACKSON

Thesis submitted for the degree of Doctor of Philosophy in Nursing Research to the Florence Nightingale Faculty of Nursing, Midwifery & Palliative Care

2020

King's College London

Dedication

I dedicate this thesis to Louis, Sophie, Lillian, Beth, and all of my honorary God Children. May you all find worthy questions to answer, too.

Epigraph

It is not the strongest of the species that survive, nor the most intelligent,

But the ones most responsive to change.

- Charles Darwin -

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This experience has given me pause to reflect on our family's favourite Bible passage: "Give thanks in all circumstances" 1Thessalonians 5:18. Indeed, I give thanks for this experience, and for those I met along the way.

Table of Contents

List of Figures

List of Tables

Abstract

Introduction to Topic

Nursing is a ubiquitous and important profession that makes a crucial contribution to high quality healthcare, as the largest (and costliest) healthcare profession in the UK. Many policy initiatives have re-organised healthcare delivery, impacting the work of nurses. However, there is concern among nurses that many of these policy initiatives do not adequately recognise the complexity of nursing work.

Research aim

This thesis had the dual aims of developing a new model of nursing work, based on the insights of resilient healthcare theory, and extending resilient healthcare theory by examining its applicability to nursing work.

Methods

The study had three phases. The first phase consisted of two reviews: a meta-narrative review of nursing work, and a scoping review of the resilient healthcare concepts of work-as-imagined and work-as-done. Phase 1 mapped literature and identified relevant aspects of theory. Phase 2 saw the creation of a serious video game, *Resilience Challenge*, which translated resilient healthcare concepts to clinicians through an engaging digital experience. This phase was evaluated using a cross-sectional survey at the end of the game, which assessed the feasibility and acceptability of the game as an elicitation tool.

Phase 3 of the study consisted of interviews with nurses about their work, using *Resilience Challenge* as an elicitation tool. These interviews were conducted and analysed by drawing on methods from interpretive description.

Findings

Resilience Challenge is an effective and feasible way to elicit reflections on work in healthcare. The findings of all phases of this thesis reinforce the complexity and challenge of nursing work. Nurse researchers have studied nursing work as different domains of labour (emotional, cognitive, organisational, and physical labour). However, nurses themselves understand their work as a role, either clinical work (patient facing), managing work (supporting a given ward/jurisdiction), or enabling work (research, education). Adaptation is a constant, hidden feature of nursing work.

Discussion

Other researchers have examined the role of resilient healthcare in safety science, and this theory applies to nurses' work in a variety of settings. This thesis adds new models of nurses' labour and nurses' roles, which build upon previous research by creating comprehensive pictures of what nurses do.

Conclusion

Overall, this thesis demonstrated that technology is an effective way of eliciting ideas from participants. Resilient healthcare theory resonates with clinicians, and provides a useful lens for interpreting nursing work. Nurses adapt their work constantly, and these adaptations require judgement and experience, as well as a supportive environment. New models of nurses' work may support the education and work of the profession.

1 Chapter 1: Introduction to the Thesis

1.1 Issue guiding this inquiry

This thesis was motivated by a concern to better understand nursing work, and an interest in the emerging field of resilient healthcare. Nursing is a ubiquitous and important profession that makes a crucial contribution to patient safety and high-quality healthcare. As the largest and most visible healthcare profession in the UK, and therefore one of the costliest, many policy initiatives are instigated to re-organise its structure, educational requirements, and the delivery of patient care. Changes to economic policy have meant nurses are pushed to "do more with less" (Bradley, 1999, p. 57). There is increasing concern in the profession that many of these policy initiatives do not adequately recognise the complexity of nursing work and simplify the process to the detriment of nurses and patients. There are also international examples, where nurses' work has been neglected or diminished, with negative outcomes (Afolabi et al., 2019). These ideas are discussed further in the following sections.

1.1.1. Nurses are central in safe healthcare

Nursing work is an important part of healthcare delivery for several reasons. Nurses make up the largest percentage of professionals in healthcare workforces around the world. In the UK, the National Health Service (NHS) nurses constitute 47.6% of all health care employees (NHS Federation, 2016). Similarly, in the USA (American Association of Colleges of Nursing, 2011) and in Canada (Canadian Institute for Health Information, 2017), nurses are the largest percentage of healthcare providers. This means that expenditure on

the nursing workforce is considerable, and is often a target for budget cuts (Clarke, 2011).

1.1.2. Nursing is under strain

There is ample international evidence that nurses are under strain. There are several reasons why this is the case. Patient care has become increasingly complex, with ever-increasing demand for services (Anandaciva et al., 2018, Carryer, 2020). Current healthcare systems are based on a hospital-based, infectious disease model, and are ill equipped to deal with the demand to manage chronic illness in the community (Carryer, 2020). This is coupled with the reality that the NHS faces marked financial strain and workforce vacancies (Beech et al., 2019), as do other healthcare systems internationally (Ariste et al., 2019). These contextual factors can have significant impacts on the care provided for patients (Bate, 2014).

There are numerous indicators that nurses are feeling the effects of organisational strain. In the modern neo-liberal climate, there have been negative consequences for nurses who are expected to be increasingly efficient in sub-optimal working conditions (Clarke, 2011, Traynor, 2017). The evidence of these consequences include widespread nursing burnout (Aiken et al., 2002, Epp, 2012, Jackson, 2015), difficulty maintaining staffing levels and retaining nurses (Aiken et al., 2002, Rafferty et al., 2007), and job dissatisfaction (Aeschbacher and Addor, 2018, Al Maqbali, 2015, Bamford and Hall, 2007). These effects culminate in patients' care being missed (Ausserhofer et al., 2014, Ball et al., 2014, Bittner and Gravlin, 2009, Cho et al., 2016, Recio-Saucedo et al., 2018) and medical errors (Abbasi et al., 2016, Cramer et al., 2013, Potter et al., 2005a, Wears, 2015). Perhaps the most

alarming recent example was The Mid Staffordshire NHS Foundation Trust Public Inquiry. Francis (2013) illustrated how hundreds of patients had died from a confluence of factors, including inadequate nursing care. An element of the public response to this inquiry was to blame nurses for being uncaring (Chapman and Martin, 2013). These concerns suggest a grave problem facing nurses in the NHS.

1.1.3. Proposed solutions do not address the problems

In response to the above issues, governments have enacted various measures. In some cases, individual staff have been blamed or scapegoated for system failures (Cook and Nemeth, 2010, Ford, 2018, Nicholl, 2018, Traynor et al., 2014). In other cases, there have been attempts to streamline care, such as a tool to make emotional support more efficient (Connolly et al., 2010). Nurses have also been admonished for not being caring (Corbin, 2008). In turn, the NHS introduced a Nursing Associate role as an apprenticeship position, with less educational preparation than Registered Nurses (Department of Health and Social Care, 2017). The claim was that these staff members would emphasise caring, an element missing from current healthcare.

It appears that those implementing these measures have identified the symptoms, but missed the diagnosis. The notion that caring is the sole purpose of nurses is reductionistic, especially when caring is not always supported by healthcare environments (Maben, 2008, Maben et al., 2009, Smith, 2012). The recent introduction of Nursing Associates reflects a lack of understanding of what nurses actually do. Nursing work has been difficult to specify, as there are numerous unrecognised aspects of nursing work (Nelson

and Gordon, 2006, Perry and Fairbanks, 2015). Lawler (1991, p. 6) wrote that "there is also a trend in research in the health care arena which results in nurses being ignored, undervalued, or invisible". The skilled, complex work of nurses is not replaceable through healthcare providers with less education. Researchers have demonstrated that replacing nurses with unregulated providers leads to higher patient mortality (Aiken et al., 2011a).

Additionally, the measures to introduce new roles proximal to patients miss a crucial aspect of nursing work. Nurses have a unique presence at the bedside in hospitals, 24 hours a day, 365 days a year, which enables therapeutic relationships (Bridges et al., 2013). The constant presence at the bedside also gives nurses in-depth knowledge of patients, which facilitates patient advocacy (Bridges et al., 2013). The time nurses spend at the bedside is crucial to providing quality healthcare to patients (Westbrook et al., 2011). The idea of moving nurses further from patients, by having unregulated providers working at the bedside, has the potential to impair nurses' assessments of patients. Measures like standardisation and the creation of new nursing roles have been introduced without an adequate understanding of the complexity of nurses' work.

1.1.4. The current study

The idea behind this inquiry was that developing a modern model of nursing work would assist nurses in creating workable solutions to professional problems. In this thesis, work refers to any activities and efforts nurses enact as part of their professional role, including unpaid work like extra hours after a shift. It is crucial that research articulates the nature, demands and complexity of nursing work, and its importance for patient care. Resilient

healthcare theory (Hollnagel et al., 2006) is potentially one way to address this problem. Resilient healthcare is based on systems and complexity theories and explicitly acknowledges that healthcare professionals' ability to adapt to pressures using their knowledge and expertise contributes to high quality care (Hollnagel et al., 2006). Resilience in this context is defined as

> *"the ability of a healthcare system (a clinic, a ward, a hospital, a country) to adjust its functioning prior to, during, or following events (changes, disturbances, opportunities), and thereby sustain operations under both expected and unexpected conditions" (Hollnagel et al., 2015, p. xvii)*

Resilient healthcare theory frames systems as inherently complex and unpredictable. Although this is a potentially powerful theoretical lens for examining nursing work, few studies have applied it in this way, and few nurses are familiar with its key features and insights. It is unclear to what extent resilient healthcare theory can elucidate nursing work, or whether the theory itself requires extension or modification when applied to nursing.

1.2 Aims and objectives

The study presented in this thesis aimed to develop a new model of nursing work, based on the insights of resilient healthcare theory, and extend resilient healthcare theory by assessing its applicability to nursing work.

To achieve these aims, the objectives of this study were to:

1. Investigate how researchers, using different methods and theoretical approaches, have contributed to the understanding of nursing work, through a meta-narrative review (Phase 1, Chapter 2)
2. Map relevant resilient healthcare concepts for use as a theoretical lens, through a scoping review of work-as-imagined and work-as-done (Phase 1, Chapter 3)

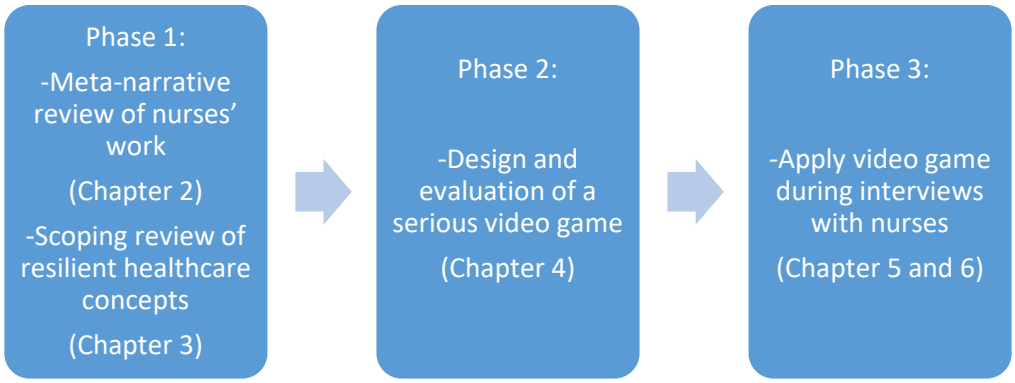
3. Operationalise and test the understanding of concepts from resilient healthcare theory in a serious video game. Evaluate the serious video game to establish feasibility and acceptability of the game as a tool to engage with healthcare professionals, using a survey and the framework analysis methodology (Phase 2, Chapter 4)
4. Use the serious video game as an elicitation tool during interviews with nurses in the UK to explore how nurses understand their work, drawing on the interpretive description methodology (Phase 3, Chapter 5)
5. Analyse interview findings inductively and using resilient healthcare concepts to provide an integrated model of how nurses view and understand their work (Phase 3, Chapter 6)
6. Synthesise all findings to develop a new model of nursing work and make recommendations for the nursing profession and workforce planning. Discuss the applications of resilient healthcare theory for nursing, and any relevant modifications to the theory (Chapter 7)

These objectives led to recommendations for clinical practice, policy and administration, education, and future research.

1.3 Overview of the thesis

This study was conducted in three phases, as illustrated in Figure 1. These phases are outlined in the following section.

Figure 1: Phases of the thesis



1.3.1. Reviews

This thesis began with a meta-narrative review to understand how nursing work has been studied and understood in previous research. This was followed by a scoping review of resilient healthcare concepts that relate to clinical work. The purpose of both reviews was to synthesise available evidence in these areas, and inform the *Resilience Challenge* video game. These reviews illustrated gaps in current understanding, and opportunities to use resilient healthcare theory as a lens to interpret nursing work. As nursing work and resilient healthcare had not been brought together previously, it was necessary to conduct both reviews before moving to Phase 2 of the study.

1.3.2. Video game

The second phase of this thesis saw the creation a serious video game, to operationalise concepts of resilient healthcare to engage with clinicians and use as an elicitation tool. Concepts were extracted from the reviews and used to create the video game, *Resilience Challenge.* The game presents a patient's journey through a hospital, with scenarios based on different aspects of nursing labour. The player makes decisions that require adaptation and trade-

offs to move the patient through the system. The scenarios were assessed for their utility in prompting participants to reflect on work in healthcare, and the effectiveness of operationalising concepts from resilient healthcare through a serious video game.

Resilience Challenge was launched online in February 2017, after development and user testing. The game was accompanied by the option to complete an immediate cross-sectional survey once participants had completed the game. The survey asked fixed-response questions about the resilience healthcare content of the game, and also the experience of playing the game. One-hundred and forty-one people completed the survey, and the results were analysed using descriptive statistics and framework analysis (Gale et al., 2013, Srivastava, 2009). The results confirmed that the video game was acceptable and feasible as an elicitation tool, and that healthcare providers could relate to and understand the concepts from resilient healthcare. *Resilience Challenge* was used in the interviews in the third phase of this research, as an elicitation tool, which is described in the following section.

1.3.3. Interviews

Phase 3 of this thesis saw *Resilience Challenge* used as an elicitation tool during interviews with nurses as part of a semi-structured interview schedule. The game was used as an elicitation tool to prompt nurses to reflect on how they adapt their work in response to complex needs. Twenty nurses were interviewed, in person and by Skype. These nurses practiced in a variety of settings in England and Scotland. All participants played the video game online during the interview and discussed how similar scenarios presented in their settings. Interviews were recorded and transcribed, and analysed by

drawing on interpretive description methods (Thorne, 2008). The interview findings demonstrated how nurses adapt their work to meet emergent demands, and facilitated new insights into how nurses understand their roles and their work. These findings are subsequently discussed with recommendations for supporting nursing work.

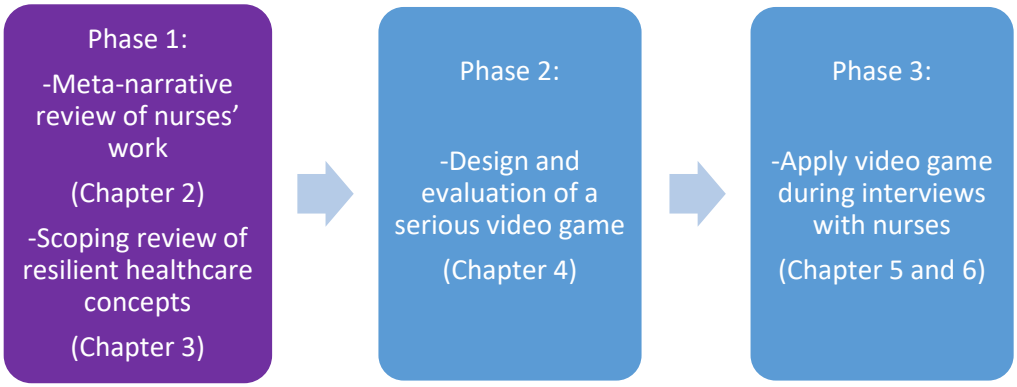
1.4 Conclusion

This thesis used creative technology to elicit nurses' understandings of their work, and synthesise a new model of nurses' work. This thesis also contributed to resilient healthcare by augmenting theory to apply to nursing. The following chapters describe this process in depth.

2 Chapter 2: Meta-Narrative Review

What do nurses do? This question has been the subject of much debate throughout the history of the profession. It is important to re-evaluate what nurses do and how they conceptualise their work in modern healthcare, so that nurses can be better recognised, resourced, and supported. This chapter reports a meta-narrative review of nursing work, which explored how earlier researchers have studied and understood nurses' work. The place of this chapter in relation to the thesis is illustrated in Figure 2.

Figure 2: Location of Chapter 2 in thesis



2.1 Historical meta-narrative review methodology

The aim of this meta-narrative review was to investigate how researchers, using different methods and theoretical approaches, have contributed to the understanding of nursing work. In this context, narrative is defined as the "unfolding 'storyline' of a research tradition over time" (Greenhalgh et al., 2005, p. 417). The purpose of the meta-narrative review was to understand how nurse researchers understood nursing work, to inform later phases of this study that explored how participants understand their work. The methodology for this review is discussed in the following section.

2.1.1. Overview of method

A meta-narrative review was selected as the review methodology to evaluate the trajectory of nursing work research. Meta-narrative reviews "illuminate a heterogeneous topic area by highlighting the contrasting and complementary ways in which researchers have studied the same or a similar topic" (Greenhalgh et al., 2005, p. 417). Grant and Booth (2009) report that meta-narrative reviews have grown in popularity as a way for researchers to interpret and theorise about an existing body of literature, rather than aggregating data.

A meta-narrative review locates evidence in its historical context, providing readers with an overview of the evolution of a topic (Norman and Griffiths, 2014). Drawing on Kuhn (1962), researchers locate literature within a paradigm, to demonstrate how paradigms influenced shifts within a narrative (Aveyard et al., 2016). Meta-narrative reviews work well for topics that do not fit in a narrow frame of investigation (Greenhalgh et al., 2005). This is the case in nursing work, where there are a wide variety of relevant concepts.

2.1.2. Method in the meta-narrative review

The methods for meta-narrative reviews are outlined by Greenhalgh et al. (2005) with stages of: planning, searching, mapping, appraisal, synthesis, recommendations, which are depicted in Table 1.

Table 1: Overview of meta-narrative review method

Guiding Questions	• What has been the historical understanding of nursing work? • What research methods were used? • When were there shifts in the meta-narrative of nursing work, and what drove these changes? • What are the implications of this narrative?
Stage 1: Planning	• Determine scope of review • Relevant fields of literature include nursing, sociology, grey literature including reports
Stage 2: Searching	• Consult experts for guidance • Browse articles, using initial keywords: nursing work/labour/tasks • Use personal experience to inform searches • Search forward through reference tracking, and backward through citation tracing
Stage 3: Mapping	• Citation tracing revealed historical documents where conceptualisation of nursing labour had been unified. Further explored • Searched for reviews and synthesis to assess for other concepts • Grouped like ideas together, and arranged chronologically
Stage 4: Appraisal	• Evaluated citations for relevance and refined inclusion criteria
Stage 5: Synthesis	• Map paradigms of interest from articles • Identified contributions of ideas, and evolution of overarching narrative • Compared different understandings of work to contrast • Considered what was present and what was missing
Stage 6: Recommendations	• Identified opportunities for further study

Adapted from (Greenhalgh and Peacock, 2005, Greenhalgh et al., 2011)

These stages are discussed in detail in the following sections.

2.1.2.1 Planning stage

During the planning stage, decisions were made about the scope and nature of the review. It was determined that the review would focus on conceptualisations of nurses' work, rather than issues like evaluating the outcomes of the work. Inevitably, there are places where these lines blur, but concerted effort was made to focus on the conceptualisation of nursing work itself. The emphasis was also placed on nursing work rather than care, as care as a concept is so broad it was difficult to operationalise. The term 'work' was deliberate, as this is what nurses are paid for, and thus could inform future workforce policy.

2.1.2.2 Searching stage

The searching stage included a variety of techniques to find and retrieve articles. There were two prongs of the approach to the search strategy for this review, the first of which was database searching. The databases used in this search were Medline, Embase, CINAHL, JSTOR, and Scopus. These databases were identified in collaboration with an expert librarian. English language limiters were used. Endnote software was used as a reference manager, to organise and index references.

Initially, the search terms "nurs* AND work AND labour" were used as keywords, as without work, labour found thousands of entries related to maternity care. In Embase and Medline, this initial search produced manageable results. In both CINHAL and Scopus, the same search terms were used to search titles, rather than keywords. This was because initial searches using the keyword strategy produced over 49,000 results. In JSTOR, the search using titles produced more than 50,000 results. Thus, the search was

refined to a “TITLE nurs** and ABSTRACT work AND labour”. This produced a more manageable number of results (hundreds, rather than thousands).

The second prong of the search strategy was identifying and tracing seminal nursing texts. Nursing experts were consulted about seminal texts that explore nursing work. Three professors of nursing were informally interviewed. Each professor suggested specific resources, which were included in the search. The techniques for this method were citation tracking, looking forward for subsequent publications, and reference lists to work backwards (Aveyard et al., 2016). Much of the seminal material on nursing work was published before 1990, some of which has not been digitised. Additionally, some contributions to nursing work are published as books, rather than journal articles. These factors necessitated adjustments in searching strategies to complement database searching.

The final searching process produced 111 articles, with totals shown in Table 2. In this table, hand searching refers to all articles collected through citation tracing, reference lists, expert recommendations, and hand searching. The searching process is outlined in Figure 3, based on PRISMA guidance (Moher et al., 2009). The last search was conducted on June 12, 2019.
The inclusion and exclusion criteria for the articles in this review are discussed in the appraisal phase below.

Figure 3: PRISMA diagram of meta-narrative review

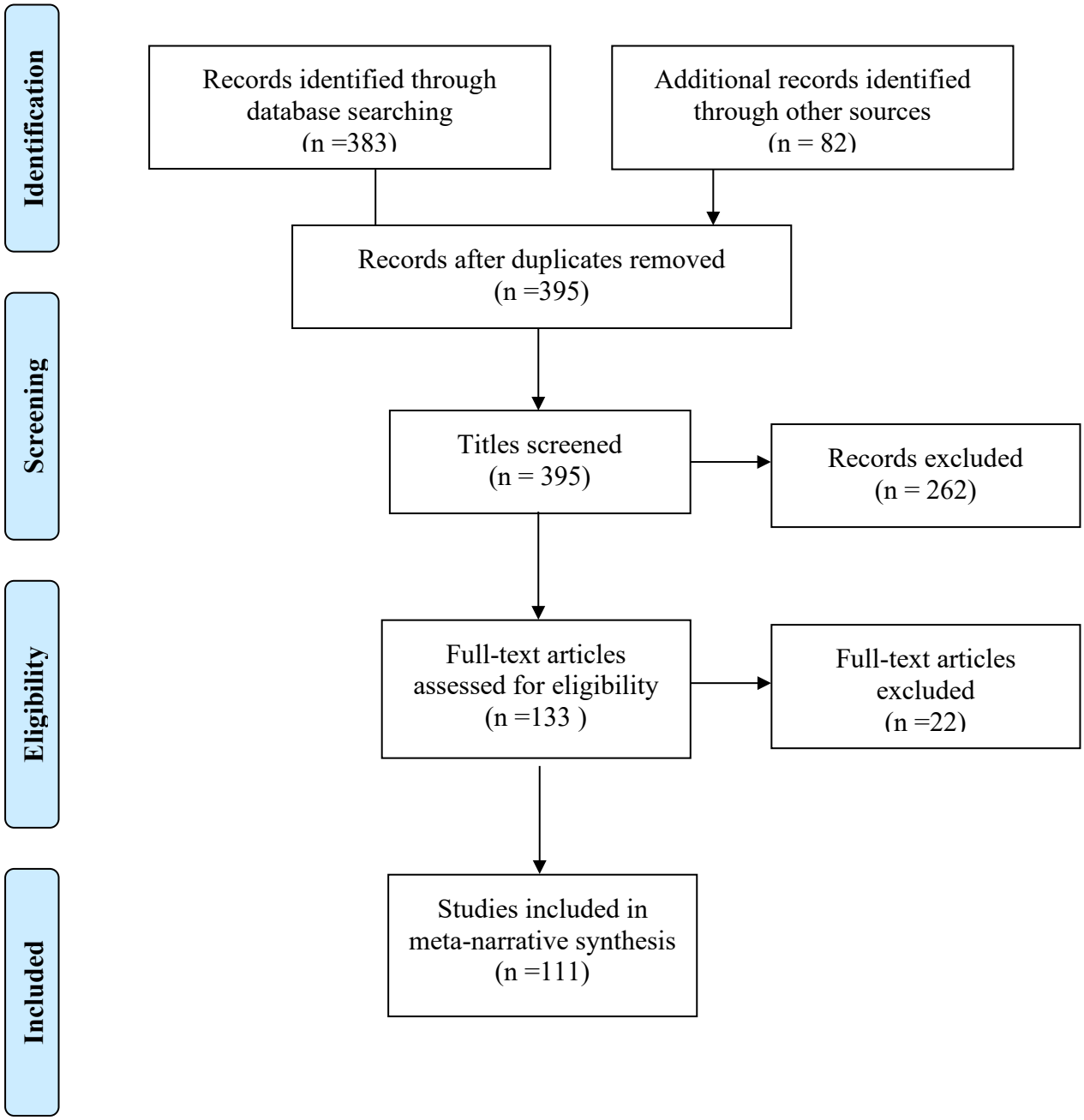


Table 2 illustrates the sources of the articles, from both hand searching and database searching.

Table 2: Article count by source

Source	Final articles included
Hand searching	68
CINAHL	3
Embase	16
JSTOR	1
Medline	8
Scopus	15
Totals	111

These articles were mapped for paradigms and themes, which is discussed in the following section.

2.1.2.3 Mapping stage

The mapping phase of the review examined the meta-narrative of nursing work, the associated paradigms, and sub-themes within the narrative. The first factor that became evident during the full text review of the articles was that the meta-narrative of nursing work occurred in different domains of labour. James (1992, p. 488) conceptualised nursing as "Care = organisation + physical labour + emotional labour". This seminal article provided a starting point for many later authors. A working model of organisational labour, physical labour, and emotional labour was visible in later articles. These categories were adopted as an organising framework for the meta-narrative, with a category of 'combined' for articles that discussed more than one type of labour. It became evident that an additional category was needed, as seminal work like that of Benner (1982) on learning and skill acquisition occurred outside the categories of physical, emotional, and organisational labour. A

working concept of cognitive labour was adopted as a narrative category. The model of domains of labour proved to be suitable for mapping the articles included in the review.

The data extraction process drew on recommended extraction variables for meta-narrative reviews of mixed-method studies from Aveyard et al. (2016). The variables included aim, participants, methods, and key themes and results. These data extraction tables for this review are presented in Appendices A-E, to outline a data extraction audit trail and demonstrate rigour in the meta-narrative review process.

The identification of paradigms was included in the data extraction process. Data were extracted based on guidance from Aveyard et al. (2016) on recommended extraction categories for comparing articles with different methods. 'Paradigm' was included, corresponding with the Kuhn influence on this method. Articles were classified by their paradigmatic orientation. The paradigms identified in articles in this review were empirical, interpretive, critical, and evidence-based practice. These paradigms were identified in articles based on authors' overt statements or implications from the article aims and methodological choices. This process was necessarily an inexact science, as articles were not always neatly described in a single category. For example, some articles contained critical elements, but had an overall orientation towards the interpretive paradigm. The judgement was made to categorise articles based on the most prominent paradigm, with the caveat that categories are not mutually exclusive.

Articles were grouped by themes within each domain of labour narrative, to demonstrate the nuance of articles within the domain. These themes were

developed inductively during the process of review and helped to make sense of the diverse perspectives present in the narrative. For example, the narrative of physical labour contains the themes: impact of physical labour upon nurses, senses, body work, and touch. The articles in each labour domain were read together, and common themes were identified. These themes serve to illustrate how the domain of labour intersected with a paradigm, creating different themes within a larger area of study.

2.1.2.4 Appraisal stage

The appraisal of the articles in this review determined inclusion and exclusion. Titles were initially screened for relevance, and exclusions were made on that basis. The second screening was full text of the articles, as articles did not always include abstracts. The inclusion and exclusion criteria that were used during the appraisal are depicted in Table 3.

Table 3: Inclusion and exclusion criteria

Inclusion	Exclusion
-English	-Non-English
-Full text available	-Abstracts
-Articles, books, theses	-Legal decisions, syllabi, conference proceedings, grey literature (Nursing Times)
-Nursing work or labour	-Labour where used to refer to giving birth in maternity -Workforce- i.e. recruitment, retention, intent to leave, part time vs full time, staffing -Cost of wages, industrial action -Workplace satisfaction, unless directly linked to labour -Non-nursing references[1]

[1] An exception was made for seminal sources that had directly influenced nursing authors, such as DREYFUS, S. E. & DREYFUS, H. L. 1980. A five-stage model of the mental activities involved in directed skill acquisition. DTIC Document.

A full text review was carried out on all sources, as abstracts were not available for many sources. The exclusion criteria were developed iteratively, including workforce issues, wages, and workplace satisfaction. Areas like workforce issues could be considered part of a wider narrative of nursing work, but a full analysis of these areas was beyond the scope of this review. Articles were also excluded on the basis that they did not refer to nurses, discussed workforce issues that did not address the work itself, focused on industrial action and policy, or discussed workplace satisfaction.

A formal quality appraisal tool was not used as part of the inclusion/exclusion criteria for the review. The historical nature of the review meant that some research studies would not have been conducted with similar methods today. For example, James (1989) gave very little detail about her research methods, but spent the first 10 pages of her publication justifying why it was important to study women and their emotions at all. While this would not be acceptable for today's journal editors, it is revealing about the culture of nursing research at the time. Additionally, the focus of meta-narrative reviews is on scoping different approaches to studying and understanding a topic, rather than assessing the quality of individual studies (Robert, 2017).

2.1.2.5 Synthesis stage

The synthesis stage created the meta-narrative framework of nursing work, when article classifications were organised into meaningful groups. The nursing work meta-narrative includes four types of labour: physical, emotional, cognitive, and organisational labour (and combinations of these). An additional category is combined narratives, where studies explore multiple

labour narratives in one inquiry. Each labour narrative was explored for sub-themes, which were often demarcated by paradigms, as researchers had approached nursing labour in different ways. The articles were then organised in tables for analysis (Appendices A-F). This process included tracing the evolution of the labour narratives, contrasting different understandings of nursing work, and considering what was present or missing in the narratives.

The data extraction tables for this review are presented in Appendices A-F, to avoid disrupting the flow of the review findings. The meta-narrative of nursing work was found to have five domains of labour: combined, physical, emotional, cognitive, and organisational. In each of these narratives, sub-themes and paradigms were identified. The synthesis stage refined all these categories to determine the resultant meta-narrative model.

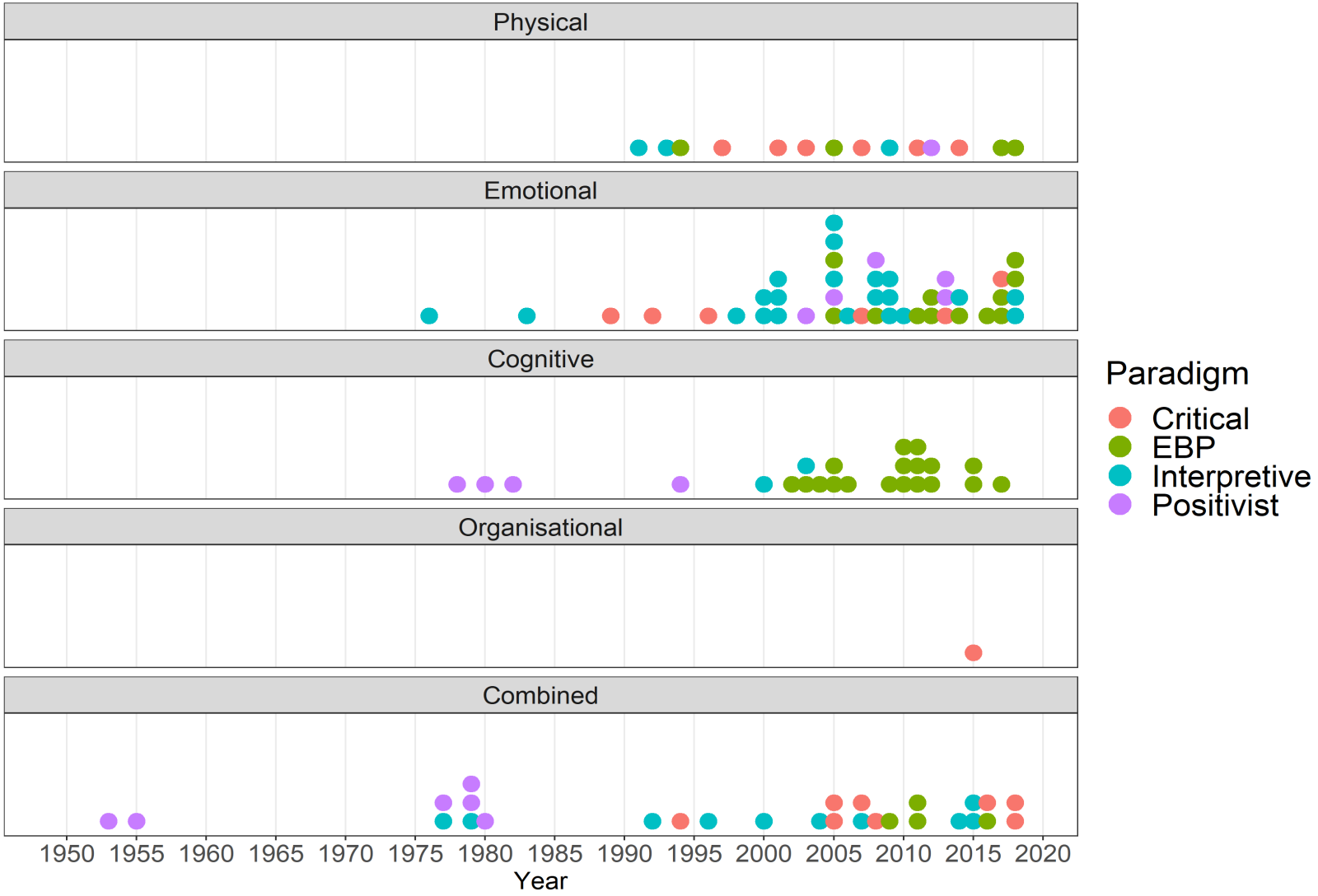
2.2 Review findings

This section reports the overall findings of this review, the paradigms used in these articles, and an in-depth assessment of each narrative and its sub-themes.

2.2.1. Overall findings

A total of 111 articles were included in this meta-narrative review. These articles revealed five narratives of nursing work, where work is conceptualised as labour. These were: combined views of work (n=28 articles), physical (n=14), emotional (n=44), cognitive (n=24), and organisational labour (n=1). The paradigms identified in the meta-narrative were the empirical, interpretive, critical, and evidence-based paradigms. The distribution of articles by domain of labour and paradigm are presented in Figure 4.

Figure 4: Meta-narrative review articles mapped by paradigm, domain of labour, and date



Sub-themes of each type of labour were also mapped to illustrate different narratives within each domain of labour (Table 4).

Table 4: Overview of meta-narrative sub-themes

Narrative	Sub-themes
Combined labour	-Task assessment -Modelling nursing work -Role of nurses -Taboo work -Social determinants of nursing work
Physical labour	-Impact of physical labour upon nurses -Senses -Body work -Touch
Emotional labour	-Concept development of emotional labour -Overall narrative -Measurement -Emotional labour as a gift
Cognitive labour	-Learning -Thinking -Stacking -Cognitive load
Organisational labour	-Invisible organising work

The following sections discuss the findings of this review in more detail, beginning with the paradigms mapped in the included articles.

2.2.2. Paradigms of authors

Nursing researchers have used several paradigms to study nursing work (Figure 4). A paradigm is a pattern of beliefs and practices, demonstrating researchers' philosophical assumptions about their subject (Weaver and Olson, 2006). A paradigm influences what research topics are investigated and how research is conducted (Monti and Tingen, 1999). There are disputes about the nomenclature and boundaries of paradigms in nursing research (Welford et al.,

2011), so the paradigms identified in this review are open to interpretation. The following section explores the empirical (n=16 articles), interpretive (n=36), critical (n=21), and evidence-based practice paradigms (n=38), which were evident in this review.

2.2.2.1 Empirical paradigm

The first paradigm that emerged in nursing research is the empirical paradigm, sometimes called positivist/ post-positivist paradigm (Broom and Willis, 2007, Welford et al., 2011). The empirical paradigm is based on the belief that an external reality exists, and it can be measured and experienced through the senses (Monti and Tingen, 1999). Articles influenced by the empirical paradigm test hypotheses, and establish relationships between variables (Monti and Tingen, 1999), often using quantitative methods when conducting research (Gillis and Jackson, 2002).

The empirical paradigm was used in 16 articles in this review. This paradigm is evident in several ways in the nursing work meta-narrative. Authors such as Goddard (1953) observed and measured nurses' work to develop an objective assessment of nursing. Other authors developed scales to measure and quantify emotional labour (Brumit and Glenn, 2013, Picardo et al., 2013). Authors also used statistical techniques to model nurses' work, and compare across wards (Moores and Moult, 1977). The empirical paradigm has been absorbed into the evidence-based practice paradigm, which is discussed in a following section.

2.2.2.2 Interpretive paradigm

Another paradigm that is important to nursing is the interpretive paradigm, which examines a phenomenon through the eyes of the people that

live it (Weaver and Olson, 2006). The interpretive paradigm values personal knowledge, which is an integral part of nursing knowledge (Carper, 1978). Research in the interpretive paradigm is based on understanding individuals' experiences, and often uses qualitative methods like interviews (Gillis and Jackson, 2002). Researchers in the interpretive paradigm seek to make their biases clear as part of the context of the article (Broom and Willis, 2007).

In this meta-narrative review, the interpretive paradigm was identified in 36 articles. These articles focused on nurses' experiences and understandings of their work. Examples include how nurses felt about doing 'taboo' work (Bishop, 2007) or managing emotional labour in the context of patients' deaths (Brighton et al., 2018). These authors explored what nurses' work included, with emphasis on the experience of this work.

2.2.2.3 Critical paradigm

A third paradigm in nursing research is the critical paradigm, which focuses on power and social struggles (Gillis and Jackson, 2002). The elimination of oppression is the main goal (Weaver and Olson, 2006). Wuest (1994) states that knowledge cannot be value-free and is shaped by the society from which it emerges. Adherents of the critical paradigm believe it is not enough to observe or study power inequalities in society; action must be taken (Wuest, 1994). This paradigm has been used by authors who view nursing as a profession that has moved beyond caring for an individual with illness, to try and minimise the harm to populations through social and contextual circumstances (Nortvedt, 2001).

The critical paradigm was evident in 21 articles included in this review. Authors demonstrated how nurses' work is determined by gender (George,

2008), race (Allen, 2014), and class (Kowalchuk, 2018). Authors illustrated how nurses did not always have control over their work, which was a product of social norms and expectations (Kowalchuk, 2016). Authors advocate that nurses' social conditions be improved to improve their work (Ray, 2016). The articles in this review drawing on the critical paradigm challenge the status quo and propose alternative understandings of nursing work.

2.2.2.4 Evidence-based practice paradigm

Evidence-based practice (EBP) began in the early 1990s in medicine, to shift decision-making from being experiential to using evidence (Grant and Booth, 2009). The purpose of EBP is to improve healthcare through science, using research data to guide practice (Stevens, 2013). The EBP paradigm is seen in the rise of systematic reviews (Grant and Booth, 2009, Mulrow, 1994, Norman and Griffiths, 2014). EBP could be considered a neo-empiricist movement, as there is an emphasis on reporting methods such that a study could potentially be replicated. There is criticism that EBP marginalises nursing and is following medical research without pause (Mitchell, 1999). However, EBP is currently the most widespread paradigm in nursing research.

The majority (n=38) of the articles in this review are based in the EBP paradigm. These include examples like Potter et al. (2004), who used a human factors approach to mapping nursing work, and a systematic review of emotional labour (Edward et al., 2017). The studies in this review demonstrate the "rise and rise" (Norman and Griffiths, 2014, p. 1) of the evidence-based paradigm, which has come to dominate nursing research.

2.2.2.5 Influence of paradigms

There are several patterns in this review associated with the narratives of nursing labour and research paradigms. Over time, the diversity of paradigms in the narrative has decreased, as now nearly all articles are framed as EBP. Cognitive labour is nearly all either empirical or EBP, in contrast with emotional labour where all paradigms are represented. Authors drawing on the critical paradigm have been comparatively fewer. These findings suggest that authors tend to approach different types of labour with different paradigmatic views, which influence the associated articles.

The following sections explore each narrative in detail, to demonstrate the content of the nursing work narrative. Each domain of labour is reported, with its sub-themes, in the following sections. Tables of the extracted findings are presented in full as appendices.

2.2.3. Combined narratives of nursing work

The first domain of labour presented in this review is the combined narratives of nursing work. These articles discuss nursing broadly, encompassing several aspects of the work (such as both physical and emotional labour). The combined narratives consist of 28 articles, from 1953 to 2019. There are five sub-themes: an assessment of nurses' tasks (n=5), modelling nursing work (n=3), appraising nurses' roles (n=7), nursing work as taboo work (n=4), and social determinants of nursing work (n=9). All of the articles in this section are listed in Appendix A and described further below.

The understanding of nursing work has evolved considerably in the history of the modern profession. Research on nursing work started with comprehensive assessments, looking at the broad scope of nurses' roles and

duties. Over time, the combined narrative focused on tasks and reductionistic models of nursing. Paradigmatic shifts are obvious within this narrative and are reflected in the sub-themes below.

2.2.3.1 Task assessment

It has often been argued that nursing is more than the sum of its parts. However, the parts, or tasks of nurses have been a focus for researchers. In this review, there were five articles about nurses' tasks (Battisto et al., 2009, Goddard, 1953, Lavander et al., 2016, Moores and Moult, 1979a, Westbrook et al., 2011). These articles draw from either the empirical or EBP paradigms

Chronologically, the first article on nursing work in this review was by Goddard (1953), where investigators recorded nurses' minute-by-minute work through direct observation. Goddard (1953) located nursing work in a complex and dynamic environment. He identified that nursing required considerable adaptation, and that "any attempt to analyse this work inevitably results in a cold, calculated list of duties and fails to convey the atmosphere in which duties are performed" (p. 25). He defined nursing duties in three categories: nursing (59.8% of nurses' time) which consisted of care given directly to patients, organisational (23.5%) which constituted running the ward, and domestic (16.7%) which included cleaning the ward.

Goddard's (1953) most influential work came from his division of nursing work (the aforementioned 59.8%) into basic nursing and technical nursing. The definition of basic nursing was care that all patients required, such as washing or feeding. Technical nursing referred to care that was specific to patients' diagnoses, such as managing a catheter. Goddard (1953) appeared to apply 'basic' and 'technical' as incidental terms, to distinguish

nursing work by its orientation, not value. However, these terms were applied in ways that created a hierarchy of tasks in nursing, which subsequently had widespread impact. For example, Moores and Moult (1979a) studied nursing using the same terminology, and found that senior nurses did more technical and administrative work, with students and junior nurses doing more basic work. These ideas persisted through later additions to the narrative. The ideas of dividing work this way created influential judgements of whose work was more valuable in nursing. For example, managing ward staffing was perceived as higher value than washing a patient. Later studies demonstrated how nursing work was being divided by race and class, according to these demarcations (Allen, 2014, Smith, 2012).

Task analysis continues to be a prominent frame for studying nursing. Several authors have written articles similar to those of Goddard (Battisto et al., 2009, Lavander et al., 2016, Westbrook et al., 2011). In lieu of basic and technical, the terms direct/indirect care are used to quantify nursing work. A similar issue emerges, as there is a division of this labour among senior/junior staff. Authors implicitly privilege direct care as being a more appropriate nursing task, despite the fact that documentation takes up the largest proportion of nurses' time (Battisto et al., 2009, Lavander et al., 2016). Authors who studied nursing tasks state that nursing is complex and lists of tasks are insufficient to capture the complexity of the work. However, the reported lists of tasks and their accompanying proportions of time (Battisto et al., 2009, Westbrook et al., 2011) present a reductionistic picture of nursing work.

2.2.3.2 Modelling

The next theme in the combined narratives of nursing work is modelling of work. This theme consists of three articles (James, 1992, Moores and Moult, 1977, Moores and Moult, 1979b), in both the empirical and interpretive paradigms. Rather than codify nurses' tasks, these authors attempted to provide models of nursing work. Moores and Moult (1977), (1979b) created statistical models of nursing work in relation to hospital pressures. They identified that work varied based on the time of day and the number of nurses that were present. These findings demonstrated variability in nurses' work, and that what nurses did was adapted to the ward context, and not only the patients.

Another conceptualisation of nursing work was presented by James (1992, p. 2) who authored the formula "care = organisation + physical labour + emotional labour". James (1992) presented the idea that nursing work is labour, rather than an innate caring activity. Further, she developed the idea that nurses' work can be understood as different domains of labour, rather than groups of tasks. James (1992) domains of labour outlined in her model serves as a precursor to other authors who studied domains of labour, and the meta-narrative in this review.

2.2.3.3 Role

The third theme in the composite narrative of nursing work is roles, looking at nurses' contributions to healthcare, rather than nurses' tasks. This theme consisted of seven articles (Adams et al., 2000, Hockey, 1977, Liaschenko and Peter, 2004, Melia, 1979, Pembrey, 1980, Richardson, 1996,

The Standing Nursing and Midwifery Advisory Committee, 1955) from both the empirical and interpretive paradigms.

Many authors responded to earlier empirical research that had focused on nurses' tasks (Hockey, 1977, Melia, 1979, The Standing Nursing and Midwifery Advisory Committee, 1955). Authors stated that previous articles had "…gone too far in an attempt to define in precise terms nursing, technical and domestic duties. There is no such rigidity in the present overall pattern of nursing…" (The Standing Nursing and Midwifery Advisory Committee, 1955, p. 12). Hockey (1977) and later Liaschenko and Peter (2004) argued that nurses cared for a whole person, rather than treat a disease. Melia (1979) conceptualised nursing work as complex work in unstable environments, that required substantial skill. Pembrey (1980) explained how nurses may share a job title, but approach a role like Ward Sister very differently. Richardson (1996) and Adams et al. (2000) both demonstrated how nurses fulfilled the scope of a role, doing whatever tasks were required. These authors explained nursing as a role with a holistic focus, rather than a series of tasks. These contributions advanced the narrative by including the purpose of nurses, beyond their activities.

2.2.3.4 Taboo work

This review produced four articles about taboo work, where nurses do work that was considered socially unacceptable (Bishop, 2007, Bolton, 2005, Capri and Buckle, 2015, Ray, 2016). These articles were written in the interpretive and critical paradigms. Taboo work included nurses working with women having abortions (Bishop, 2007), miscarriages and gynaecological problems (Bolton, 2005), and people with intellectual disabilities (Capri and

Buckle, 2015). Nurses in all of these articles reported that their work was either ignored or deliberately hidden, because colleagues and the public found it disconcerting. Nurses bonded with each other, because they felt that no one else understood their struggles or experiences. There was considerable difficulty doing this work, but nurses stated that they derived job satisfaction from knowing they were helping people where others would not have done (Bishop, 2007, Bolton, 2005). The taboo nature of nursing work meant that labour was marginalised further than other acceptable types of nurses' labour. These authors demonstrate how nurses may be mainstream or marginalised, based on the nature of their work.

2.2.3.5 Social determinants of nursing work

The final theme of the combined narrative of nursing work is social position. This theme consisted of nine articles; two in the interpretive paradigm (Bogossian et al., 2014, Hart and Warren, 2013), one in evidence-based practice (Myny et al., 2011), and six in the critical paradigm (Brennan, 2005, Coburn, 1994, George, 2008, Kowalchuk, 2016, Kowalchuk, 2018, Quance, 2007). This group of authors argue that what constitutes nursing is culturally determined; therefore, there is no objective work of nurses. Rather, what is expected of nurses is dictated by gendered social norms (George, 2008, Ray, 2016). Authors highlight the work of nurses as generally low status and undervalued, in both society at large and relative to medicine (Brennan, 2005, Coburn, 1994). Poor working conditions for nurses reflect the devalued status of nursing work, and have serious consequences for nurses and their families (Hart and Warren, 2013, Kowalchuk, 2016, Kowalchuk, 2018).

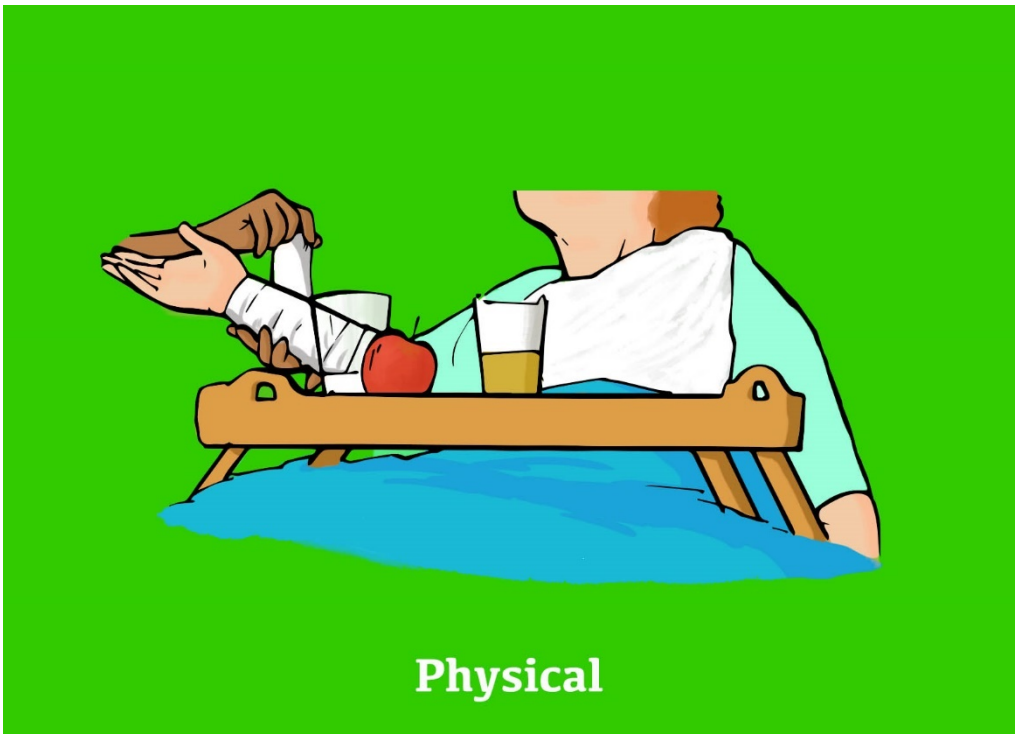
The theme of socially determined work reflects how nursing work is influenced by factors outside of nurses' control. Bogossian et al. (2014) and Myny et al. (2011) illustrate how being short staffed, having acute or demanding patients, and a lack of support in the care environment all influence nurses' work. Nurses reported that they were at the mercy of their environment, and had to adapt to challenging conditions (Myny et al., 2011). The combination of low pay and media criticism left many nurses considering whether it was worth it to continue in the profession (Bogossian et al., 2014). Challenges relating to social position are a universal concern, particularly impacting nurses outside high-income countries (George, 2008, Kowalchuk, 2016, Kowalchuk, 2018, Ray, 2016). These authors foreground the impact of the environment on nurses' work, and emphasise the impact of external factors.

In addition to this combined narrative of nursing work, researchers studied different aspects of nurses' work in-depth. These narratives are reported in the following sections, beginning with physical labour.

2.2.4. Physical labour

The physical labour portion of this review included 18 articles, documented in Appendix B. Physical labour refers to work that nurses do with their bodies (Figure 5). All four research paradigms are represented in this narrative. Sub-themes of the physical labour narrative were the impact of physical labour upon nurses (n=3), nurses' sensorium (n=3), body work (n=7), and touch (n=1). These themes are explained in the following sections.

Figure 5: Physical labour



2.2.4.1 Impact of physical labour upon nurses

Nursing work is physically demanding, which can be seen in the consequences of this labour on nurses. The theme of the impact of physical labour upon nurses consisted of three articles (Caroe et al., 2018, Engels et al., 1994, Jungbauer et al., 2005). All of these articles were written in the EBP paradigm.

There is considerable evidence about the harms of physical work on nurses, including back and joint injuries, such as Yassi et al. (1995). Much of this literature was beyond the scope of this review, but the searches did produce examples of nurses being harmed by their work. The environmental constraints of hospital settings mean that nurses spend much of their time standing, walking, or in twisted postures (Engels et al., 1994). Consequently, nurses are at high risk for back injuries, fatigue, and joint strains.

Another impact of physical labour upon nurses is hand eczema due to wet work. Wet work has been defined as having hands wet for more than two hours per day, wearing gloves for more than two hours per day, or washing hands more than 20 times per day (Caroe et al., 2018). Over 40% of healthcare professionals have hand eczema due to wet work, which may cause nurses to leave their jobs (Caroe et al., 2018). The rates of wet work varied by ward specialty, with nurses in intensive care having their hands wet the most often, at 30-49 times per day (Jungbauer et al., 2005). Nurses' roles in washing patients or performing tasks that require gloves mean they continue to be at high risk for complications of wet work.

In addition to the impact on the body, nurses also use their senses in their work. Labour using the senses is presented in the following section.

2.2.4.2 Senses

Nurses' sensorium, or use of the senses in an integrated capacity, has been recognised as part of nursing work. There were three articles in this theme: Donetto et al. (2017), Dresser (2012), Hockey and Allen-Collinson (2009). Dresser (2012) and Donetto et al. (2017) identify the senses as part of nurses' surveillance of patients, such as watching patients. Nurses also used hearing as embodiment of their work, both when speaking and through assessment, i.e. auscultation (Donetto et al., 2017). Dresser (2012) urges nurses to use surveillance as a tool for protecting patient safety, but neglects to discuss how patients may experience this surveillance. Hockey and Allen-Collinson (2009) discuss the senses as a mediator between the nurse, patient and environment. These authors also emphasise the expertise of sensory work, such as the dexterity of using surgical tools (Hockey and Allen-Collinson,

2009). Nurses also regulate their responses to sensory information, such as keeping their faces neutral while smelling something unpleasant (Hockey and Allen-Collinson, 2009). These authors demonstrate that nurses use their senses to inform all aspects of their work.

2.2.4.3 Body work

The theme of body work relates to the social context of nurses' bodies, which carry social norms and meanings. Body work can be defined as the use and management of one's own body in a working capacity (Gimlin, 2007, Shakespeare, 2003). There were seven articles on body work in nursing. One article drew on the interpretive paradigm (Lawler, 1991) and six articles drew on the critical paradigm (Cohen, 2011, Draper, 2014, Gimlin, 2007, Savage, 1997, Shakespeare, 2003, Van Dongen and Elema, 2010).

Several authors have focused on the social implications of nurses' bodies. Lawler (1991) illustrated how nurses must cross social norms to provide nursing care. The virtue framing of nurses as women called to a higher vocation, made it acceptable for nurses to wash patients, handle excreta, and other work that would be viewed as unacceptable in different circumstances (Lawler, 1991). Nurses' and patients' bodies were inherently sexual, and nurses had to overcome these expectations. Savage (1997) conceptualised nurses' bodies as political objects of resistance. Savage (1997) identified that nurses used relaxed postures, so patients associated nurses with being at home, rather than sexualising nurses. In contrast, nurses used strong, masculine postures to assert themselves when they spoke with physicians. Savage's work reflects nurses' burgeoning professional autonomy, and how nurses literally stood up for themselves.

For nurses, body work involves not only the management of their bodies, but those of patients, whose bodies become an object of work (Gimlin, 2007). The literature on body work emphasises that it is taken for granted (Draper, 2014), where only its "shadow" can be seen (Shakespeare, 2003, p. 48). For example, authors like Goddard (1953) wrote phrases like 'a bed was made', rather than, 'the nurse made the bed'. This has the effect of distancing the nurse from the task, as though the task happened passively. In turn, the work of nurses is made invisible.

Nurses' body work can be socially charged. In order to manage the social impact of their work, nurses use distancing techniques like gloves and humour (Gimlin, 2007). The discomfort of body work is also reflected in the social hierarchy in hospitals. Some authors argue that the more a professional group touches a patient, the lower their status (Van Dongen and Elema, 2010). Touching patients may not be the sole determinant of status in hospitals, but its association with workers' prestige level is notable. Cohen (2011) argues that the infinite variation of human bodies, in both patients and nurses, makes standardisation of care practically impossible. These authors argue that nurses' bodies are not neutral objects, and are imbued with social meaning.

2.2.4.4 Touch

The final theme on physical labour is touch. The touch theme was separated from the body work narrative in this discussion, as McCann and McKenna (1993) focus on touch to the exclusion of other issues. Nurses were found to touch patients for both instrumental and expressive reasons (McCann and McKenna, 1993). Instrumental touch referred to completing tasks like washing, and constituted 96% of nurses' touch with patients. Expressive touch

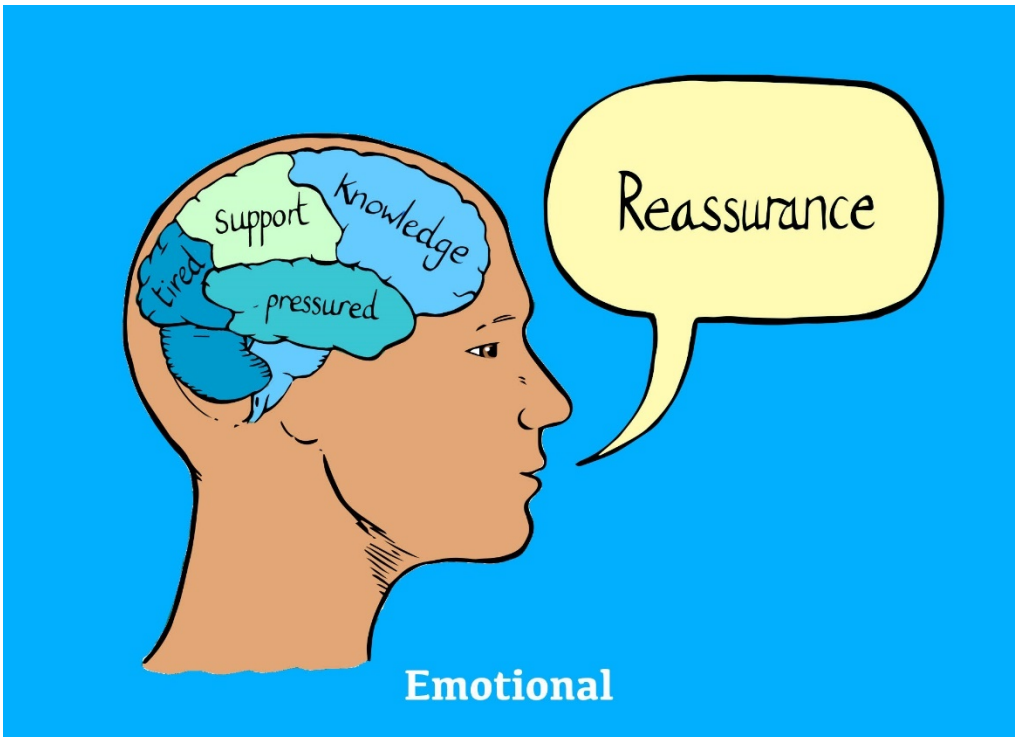
was spontaneous and meant to be comforting, and constituted 4% of touch (McCann and McKenna, 1993). Patients reported wide variations in comfort with touch, depending on individual preference, part of the body touched, and gender of the nurse touching the patient. This mirrors Van Dongen and Elema (2010) statement that nurses have varying degrees of comfort with touch, based on their personal experiences. While touch may be considered therapeutic in nursing, this literature indicates it is not universally welcomed.

Overall, the physical labour of nurses is a broad narrative, with a variety of different issues and paradigms. This is contrasted with the more homogenous narrative of emotional labour in nursing. The next nursing labour narrative is emotional labour, which is discussed in the following section.

2.2.5. Emotional labour

The emotional labour narrative is the largest in this review, with 44 articles (see Appendix C and Figure 6). Most of the articles were written in the interpretive paradigm, but all paradigms are represented. There were fewer sub-themes in this narrative, as it is a cohesive body of literature. This section discusses the development of the concept of emotional labour (n=5), measuring emotional labour (n=3), emotional labour as a gift (n=4), and articles in the overall narrative (n=32).

Figure 6: Emotional labour



2.2.5.1 The development of the concept of emotional labour

This review produced five articles about the concept development of emotional labour (Hochschild, 1983, James, 1989, McFarlane, 1976, Smith, 1992, Theodosius, 2008), in the interpretive and critical paradigms. The sociological concept of emotional labour comes from Arlie Hochschild (1983), who first conducted research with airline stewardesses. Emotional labour was defined as the commodification of managed emotions, where employees induce or suppress their feelings in order to produce a desired public display, creating a feeling in the customer (Hochschild, 1983). The authors who first applied the concept of emotional labour in nursing were James (1989) and Smith (1992). James (1989) wrote about the emotional labour of women in unpaid spheres, such as domestic labour, rather than focusing on emotional labour for paid remittance. James (1989, p. 15) defined emotional labour as "the labour involved in dealing with other peoples' feelings". James (1989)

stated that even if emotional labour was unpaid, it was still directed towards the societal goal of sustaining capitalism. In the literature reviewed here, Hochschild (1983) definition is more prominent, with authors emphasising the commercial value of emotional labour.

In applying emotional labour more directly to nursing, Smith (1992) found that nurses managed their own emotions so that patients felt cared for. There were a range of acceptable feelings for nurses to display, congruent with gender norms, such as being caring and docile (Smith, 1992). The 'labour' was required when nurses need to project something different than what they felt; for example, when nurses felt panicked but they projected calm to avoid alarming patients. Smith (1992) found that nurses were expected to undertake substantial emotional labour, but it was not directly taught, or accounted for in workload measurement.

Further study of emotional labour by Theodosius (2008) identified sub-domains of emotional labour that were performed by nurses. Theodosius (2008) wrote about the connections between emotional labour and the power dynamics between nurses and patients, amongst nurses, and nurses and the multi-disciplinary team. Emotional labour in these relationships was influenced by how much power nurses could wield in a clinical setting.

Current use of the concept emotional labour is consistent with Hochschild (1983) original definition. Some authors distinguish between emotional work and emotional labour (McClure and Murphy, 2007), but most use the terms interchangeably. Pisaniello et al. (2012) identified emotional labour as being for an organisation, and emotional work is between a nurse

and a patient. Hochschild (1983) definition is measured and assessed in other parts of the emotional labour narrative (discussed further in Section 2.2.5.3).

2.2.5.2 Overall narrative

The overall narrative for emotional labour is the most cohesive in this review. There were 32 articles in this theme, representing each of the paradigms (Bartram et al., 2012, Brighton et al., 2018, Chapman, 2018, Delgado et al., 2017, Diefendorff et al., 2011, Edward et al., 2017, Elliott, 2017, Gray, 2009, Gray, 2010, Gray and Smith, 2009, Han et al., 2018, Henderson, 2001, Huynh et al., 2008, Karimi et al., 2014, Kelly et al., 2000, Mann and Cowburn, 2005, Mark and Mann, 2005, Mauno et al., 2016, McCreight, 2005, Montgomery et al., 2005, Msiska et al., 2014, Phillips, 1996, Pisaniello et al., 2012, Smith and Gray, 2001a, Smith and Gray, 2001b, Staden, 1998, Stayt, 2009, Timmons and Tanner, 2005, Waddington, 2005, Weir and Waddington, 2008, Wu et al., 2018, Yang and Chang, 2008). There are similar findings among articles, in varied nursing settings. A point of agreement is that emotions are central to nurses' work. Emotional labour helps nurses focus on people, not tasks (Phillips, 1996) in any role or scope of practice (Staden, 1998). Emotional labour helps nurses complete their work (Gray, 2009) and manage relationships with colleagues (Theodosius, 2008, Waddington, 2005). Emotional labour is highlighted as a consistent part of nursing work, and central to nurses' identities as caregivers.

Despite the emphasis on emotional labour as a part of nursing, it continues to go unrecognised (Smith, 1992, Smith and Gray, 2001a). There remains a limited recognition of the role that emotional labour plays in healthcare systems (Smith, 1992, Smith, 2012), and that it is not always

patient facing. For example, operating theatre nurses use emotional labour to keep physicians happy and maintain patient flow (Timmons and Tanner, 2005). There is a lack of teaching and support for emotional labour (Edward et al., 2017, Msiska et al., 2014). This may be due to the idea that emotional labour is natural for women (and thus, nurses), and does not need to be taught (Elliott, 2017).

Emotional labour can also be harmful for nurses. In particular, surface acting has been associated with negative consequences (Mann and Cowburn, 2005, Yang and Chang, 2008). Surface acting occurs when nurses project emotions other than what they feel (Hochschild, 1983). There are also situations that are particularly taxing, such as working with patients who are dying (Brighton et al., 2018, Kelly et al., 2000). The negative impacts of emotional labour can be cumulative, and spill over to impact nurses' home lives (Chapman, 2018, Gray and Smith, 2009, Montgomery et al., 2005). Many authors have called for increased support for nurses' emotional labour, but the reviewed literature demonstrates that support is not widely available. There continues to be a disconnect between nurses' enactment of emotional labour and support for it in healthcare.

2.2.5.3 Measurement

Three articles in this review focused on creating scales to measure emotional labour (Brotheridge and Lee, 2003, Brumit and Glenn, 2013, Picardo et al., 2013), all in the empirical paradigm. There has been the development of an Emotional Labour Scale (Brotheridge and Lee, 2003) as an empirical way to measure emotional labour. This scale has been translated into Spanish (Brumit and Glenn, 2013, Picardo et al., 2013). While these scales

provide an empirical measure of emotional labour, the majority of emotional labour research does not use a standardised approach.

2.2.5.4 Emotional work as a gift

Some authors reflect positively on the benefits of emotional work for nurses and patients. Four articles were included in the theme of emotional work as a gift, in the interpretive and critical paradigms (Adams and Sharp, 2013, Bolton, 2000, Lopez, 2006, McClure and Murphy, 2007). Bolton (2000) states that nurses are not always demonstrating organisationally sanctioned emotions; they also show genuine feelings of care, support, and altruism. Nurses identify positive emotional work, framing it as a 'gift' rather than a burden (Bolton, 2000). McClure and Murphy (2007) echoed this finding, stating that nurses' emotional displays are not acted, and reflect authentic compassion. Lopez et al. (2010) also discussed how organisational display rules for emotions can be harmful, such as accepting verbal abuse without appearing distressed.

Similarly, Adams and Sharp (2013) studied 'caring labour', a concept they explained as skilled caring provided for an older adult in a care home. Nurses received job satisfaction from a resident's positive feedback, reinforcing their caring labour. This example resonates with a care home setting, but it is unknown whether similar findings could be identified in a situation where a patient could not respond, or did not respond positively.

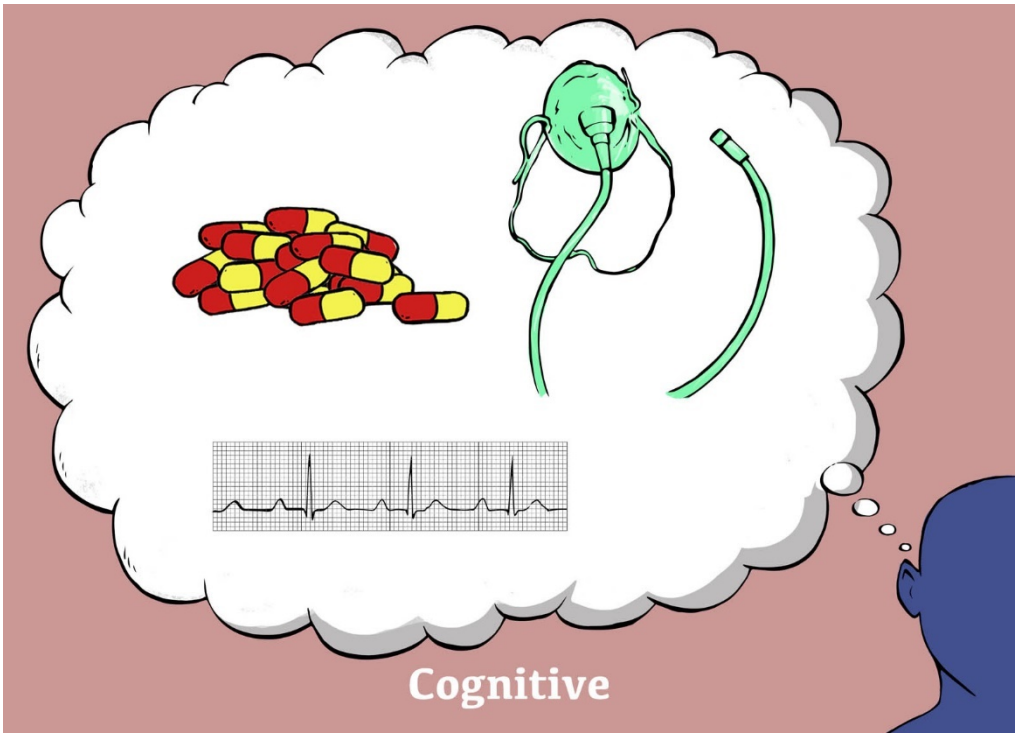
The emotional labour narrative highlights how emotional labour is central to the work of nurses, but remains unsupported and unacknowledged. Some authors contend that sincere emotional displays are personally therapeutic, but the challenges around emotional labour dominate the

narrative. The following section examines cognitive labour, the next narrative of nursing work.

2.2.6. Cognitive labour

Cognitive labour is the next domain of nursing labour, and is illustrated in Figure 7. In contrast to emotional labour, the empirical and evidence-based paradigms are the most prominent in this narrative. The search produced 24 articles, across four themes: learning (n=4), thinking (n=6), stacking (n=5), and cognitive load (n=9). These themes are summarised in Appendix D and discussed in the following section.

Figure 7: Cognitive labour



2.2.6.1 Learning

The first theme of the cognitive labour narrative is learning (Benner, 1982, Burger et al., 2010, Carper, 1978, Dreyfus and Dreyfus, 1980), including four articles from the empirical and EBP paradigms. In this context, learning refers to developing expertise in clinical practice, rather than the

process of nursing education. Carper (1978) created a model of nurses' knowledge, describing it as empirical, aesthetic, personal, and moral knowledge. This model blended the ideas that nursing could be taught in a classroom and learned through experience.

Dreyfus and Dreyfus (1980) developed a model of skill acquisition, which demonstrated that there were five stages to learning a complex skill, from novice to expert. To advance along this pathway, people needed experience to draw on in unusual circumstances (Dreyfus and Dreyfus, 1980). Benner (1982) applied this model to nursing, and outlined how experts use their experience to handle challenges. Expert nurses could also create longer-term plans, respond intuitively, and identify the most important information in a busy setting (Benner, 1982). This finding implied that nurses could adapt their work without struggle, when they had more experience. In turn, Burger et al. (2010) explained how nurses at different levels of a novice-expert continuum used different strategies to manage their work. These strategies included cognitive strategies, communication, integration of roles (i.e. teaching a patient while performing a procedure), and using organisational tools. Nurses mobilised these specific techniques to manage complex care.

The learning theme of the cognitive labour narrative firmly establishes nursing as a learned activity, rejecting ideas of nursing being vocational or innately caring. Learning in nursing enabled the study of nurses' thinking, which is explored in the following section.

2.2.6.2 Thinking

Nurses' thinking has been examined as cognitive processes among individual nurses. The thinking theme of the cognitive labour narrative has six

articles included (Higuchi and Donald, 2002, Johansen and O'Brien, 2016, Kataoka-Yahiro and Saylor, 1994, Scheffer and Rubenfeld, 2000, Simmons, 2010, Simmons et al., 2003), from the empirical, interpretive and evidence-based paradigms. There are distinctions in the literature about critical thinking (Kataoka-Yahiro and Saylor, 1994, Scheffer and Rubenfeld, 2000), clinical reasoning (Simmons, 2010), and clinical decision-making (Higuchi and Donald, 2002, Johansen and O'Brien, 2016). Critical thinking is the oldest term, and reflects attempts in the 1990s to highlight the nature of cognitive work in nursing being distinct from the caring aspect of nursing (Kataoka-Yahiro and Saylor, 1994, Scheffer and Rubenfeld, 2000). Using a Delphi method, Scheffer and Rubenfeld (2000, p. 357) determined that:

> *Critical thinking in nursing is an essential component of professional accountability and quality nursing care. Critical thinkers in nursing exhibit these habits of the mind: confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection. Critical thinkers in nursing practice the cognitive skills of analysing, applying standards, discriminating, information seeking, logical reasoning, predicting, and transforming knowledge.*

By comparison, clinical reasoning is more narrowly defined; however, there is a wide range of overlap among terms such as clinical reasoning, clinical decision-making, clinical judgement, heuristics, problem-solving, and others (Simmons, 2010). Clinical reasoning has been defined as:

> *...a complex cognitive process that uses formal and informal thinking strategies to gather and analyse patient information, evaluate the significance of this information and weigh alternative actions. Core essences of this concept include cognition, metacognition, and discipline-specific knowledge. (Simmons, 2010, p. 1155)*

Clinical reasoning is also context-specific, and reflects nurses' experiences in their practice settings (Simmons, 2010).

Additionally, nursing decision-making has also been discussed as a form of cognitive work in nursing literature, and has been used interchangeably with clinical reasoning. Decision-making has been associated with both analytical capacity, and intuition (Johansen and O'Brien, 2016). Decision-making is a process of obtaining data, integrating with knowledge and experience, making a clinical judgement, and reflecting on the outcome (Johansen and O'Brien, 2016).

Articles on nurses' thinking make distinctions between the aforementioned concepts, but it is questionable whether these differences are meaningful in practice. The articles on nurses' thinking have generally produced a long list of attributes required to think correctly. These lists include both processes and personality characteristics, as seen in Scheffer and Rubenfeld (2000). There is little discussion of how to foster attributes of critical thinking. These articles demonstrate that nurses engage in complex thought processes; however, it is unclear how these processes apply beyond individuals.

2.2.6.3 Stacking

The third theme in the cognitive labour narrative is stacking, which refers to the cognitive load nurses organise in their working memories while working (Potter et al., 2004). All five articles in this theme fit within the evidence-based practice paradigm (Patterson et al., 2011, Potter et al., 2004, Potter et al., 2005a, Potter et al., 2005b, Wolf et al., 2006). Potter et al. (2004) used a cognitive pathway map to map nurses' working memories, which overcame limitations of previous techniques that assumed linearity in nurses' work. This method enabled investigators to assess how many items nurses

would cognitively stack, how often they would shift focus, the frequency of interruptions, and time spent on different types of work (Potter et al., 2004, Potter et al., 2005a, Potter et al., 2005b, Wolf et al., 2006). Patterson et al. (2011) furthered this theme by studying how nurses prioritise items in their cognitive stacks, with implications for delegation and teaching students.

The findings of the stacking articles paint a clear picture of the substantial cognitive work of nurses. Potter et al. (2005a) assessed stacking and found that nurses averaged a cognitive stack of 15 simultaneous priorities. Nurses shifted their attention every 6-7 minutes (Potter et al., 2004, Potter et al., 2005a, Potter et al., 2005b). Potter et al. (2005a) warn that there are hard limits to the number of interruptions, cognitively stacked activities, and cognitive shifts per hour that nurses can handle. There is the potential for errors or omissions if nurses exceed the capacity of their working memories (Potter et al., 2004). These articles demonstrate how excessive workplace demand could overwhelm nurses, regardless of their competence.

While the thinking theme of the cognitive labour narrative focused on individuals, the stacking theme presents implications for workforce planning. Patterson et al. (2011) demonstrated that nurses have priorities within their cognitive stacks, and suggested that these priorities could drive delegation and role responsibility decisions. The stacking theme could have more utility for workforce planning than critical thinking because of its applicability beyond the individual.

2.2.6.4 Cognitive load

The final theme in the cognitive labour narrative is cognitive load. This theme includes nine articles, all in the evidence-based practice paradigm

(Ebright, 2010, Ebright et al., 2003, Elfering et al., 2011, Elfering et al., 2017, Koch et al., 2012, Lundgrén-Laine et al., 2011, Ng and Curley, 2012, Perron, 2015, Redding and Robinson, 2009). The cognitive load theme overlaps with ideas of stacking (Ebright, 2010) and decision-making (Lundgrén-Laine et al., 2011) but was identified separately because articles in this theme also discuss wider issues of cognitive burden and capacity.

It was agreed that nurses carry significant cognitive load during their work. Nurses used a task stacking strategy to prevent down-time while they addressed various priorities. For example, while nurses wait for a physician, they would prepare supplies for another activity (Ebright et al., 2003). Other examples of cognitive load include the volume of ad hoc decisions nurses must make to manage patient care and workflow (Lundgrén-Laine et al., 2011). These aspects of nursing create a total burden of cognitive work, which includes stacking, managing constant demands, and interruptions.

Not all cognitive load is necessary or therapeutic. Nurses had elements of cognitive load that were unnecessary, where nurses had to overcome limitations of poorly-designed systems (Ebright, 2010, Ebright et al., 2003, Redding and Robinson, 2009). Improved system design could decrease the cognitive workload for nurses (Koch et al., 2012), such as the areas of managing protocols (Ng and Curley, 2012) and medication administration (Perron, 2015). System factors are important considerations, as nurses can experience cognitive failure and make mistakes when under pressure (Elfering et al., 2011) or experiencing emotional distress (Elfering et al., 2017). These authors argue that nurses' cognitive load needs to be recognised and managed for safe patient care.

Overall, the narrative of cognitive labour is relatively new in the nursing work narrative. It exists almost exclusively in the EBP paradigm. Some authors focus on individual thought patterns, but there is also an increased recognition of the total cognitive load of all nursing staff. It is evident that cognitive labour does form a considerable portion of nurses' work, and that the categorisation is present in previous research.

An additional nursing work narrative is organisational labour, which concludes the meta-narrative review in the following section.

2.2.7. Organisational labour

The most recent addition to the nursing work narrative is organisational labour, developed by Allen (2014) (see Appendix E and Figure 8). Previously, nursing authors have focused on the work of nurses as relating directly to patient care. However, nurses conduct many activities in addition to direct patient care, which are essential for healthcare systems. This aspect of the nursing role has been defined as organisational labour (Allen, 2014). Allen (2014) evidence-based work is the only article that used the terminology of organisational labour that was identified in this review. For context, some articles from the combined nursing work narrative are used in this section, as they discuss the implied presence of organisational labour.

Figure 8: Organisational labour

Allen (2014, p. 2-3) recognised organisational labour as a legitimate part of nursing work, and defined organisational labour as:

> *"[nurses'] work in bringing patients into the organisation and mobilising action; their work in maintaining an overview of the current status of individuals' care and communicating this to relevant actors, the work in ensuring all essential activities are carried out and do not interfere with each other; their work in assembling the materials and resources that are required to support their conduct; their work in overseeing bed utilisation and their work in facilitating patient transfers."*

Organisational labour is performed mostly by nurses, and is unrecognised by everyone, including nurses themselves (Allen, 2014). Organisational labour is seen as 'paperwork' or a bureaucratic exercise that removes nurses from doing their 'real jobs'. However, Allen (2014) argues that organisational labour is among the most important work in the hospital. For example, nurses manage the flow of information across a wide number of people and departments, creating a patient's trajectory through the system. Despite the central nature of

this work, organisational labour has not reached mainstream nursing conversations.

Many authors have identified the presence of organisational labour, but not explored it as a legitimate facet of nursing labour. Organisation was included as a portion of nursing work by Goddard (1953), Melia (1979), and James (1992). Hockey (1977, p. 151) observed that "The nurse's contribution to care may lie, at least in part, in the promotion of a functional synthesis of disjointed endeavours". Potter et al. (2005b) found that nurses spend 26% of their time in consultation with others, and 23% of their time documenting care. The Royal College of Nursing (2013) indicates that nurses spend 17.3 % of all their hours worked on paperwork. Articles have consistently reported that nurses spent more time on arranging and documenting care than interacting with patients (Hendrich et al., 2008, Hendrickson et al., 1990, Hollingsworth et al., 1998, Westbrook et al., 2011). Through direct observation, Westbrook et al. (2011) reported that nurses working on wards completed an average of 72.3 tasks per hour, with 19-24% of these tasks relating to professional communication. However, this work was all considered a distraction, rather than real nursing work. Allen (2014) seminal work legitimised organisational labour as a part of nurses' work.

There were several other relevant articles on labour that did not fall into the domains. These are discussed next, in the final section of the review findings.

2.2.8. Other labour narratives

There are also known examples of affective labour (Dowling et al., 2007, Ouellette and Wilson, 2011), which refers to labour that impacts the

emotional experiences of others (rather than emotional labour, which changes the emotional display in oneself). Aesthetic labour (Timming, 2016, Warhurst and Nickson, 2007) has also been studied, and refers to embodiment of characteristics that appeal to customers. Aesthetic labour relates to dress code, appearance, and demeanour. These domains of labour are acknowledged, but no articles connecting these types of labour with nursing were found during the searching for this review.

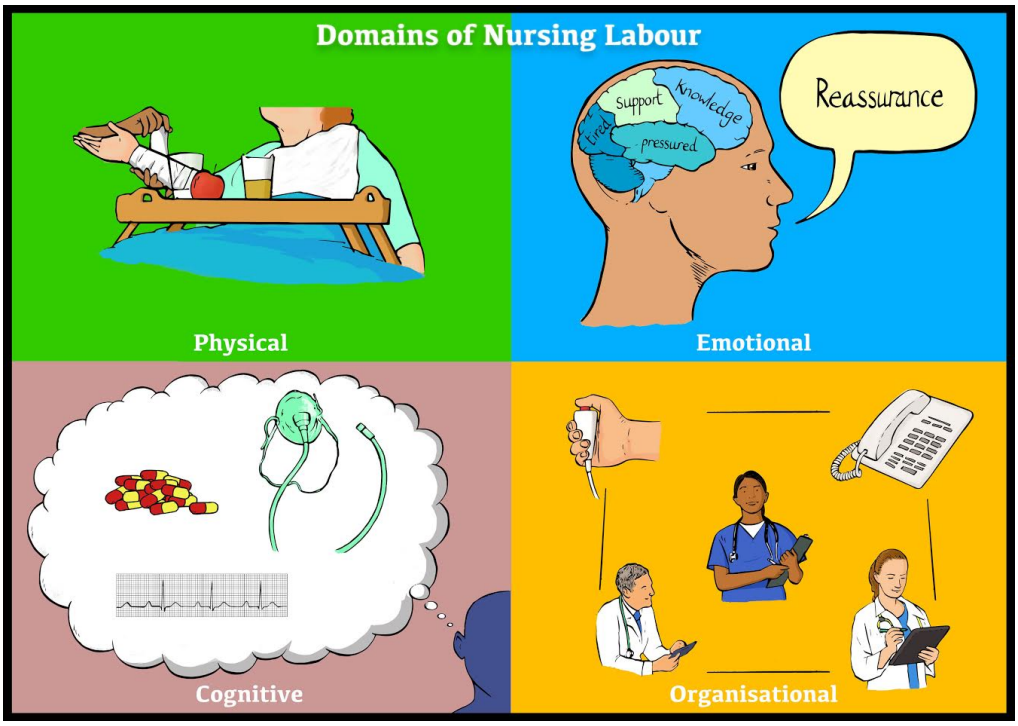
2.3 Discussion

The following section summarises and discusses the findings of the meta-narrative review of nursing work, and the implications for the current study.

2.3.1. What is nursing work?

There are three main findings from this meta-narrative review: that a) nursing work has been studied as separate domains of labour, and b) that nursing work is not always caring for patients – it can also be in response to other types of demand, and c) nursing work reflects societal needs and expectations. The synthesis of these findings is depicted in Figure 9, illustrating how separate domains of labour (physical, emotional, cognitive, and organisational) can be understood together as a broader picture of what nurses do. These findings are discussed in more detail in the following sections.

Figure 9: Domains of nursing labour



2.3.1.1 Domains of labour

The original contribution of this review is that the nursing work meta-narrative can be conceptualised as different domains of labour. A new model of nursing work (Figure 9) demonstrates aspects of nursing work that have been identified separately by nurse scholars, and brought together in this review. The study of nurses' work began by considering nurses' work as an integrated whole, rather than by dividing it into different functions or processes. Over time, researchers studied domains of labour in depth, and the narrative of nursing work became fragmented. The findings of this meta-narrative review demonstrate that each domain of labour is a part of nurses' work, including caring for patients and addressing needs from other sources. By reconceptualising nursing work as a process of responding to different demands, an integrated view of nursing becomes possible. This model informs

a broader understanding of nursing than what could be achieved by considering parts of nursing work in isolation.

Researchers have previously created frameworks of nursing work. Early articles on nursing work, including Goddard (1953), Melia (1979) and James (1992) recognised nursing as complex and having different aspects of labour, but these ideas remained in the background. James's (1992, p. 488) outline of "care = organisation + physical labour + emotional labour" is the closest model to the findings of this review. The findings of this review indicate that cognitive labour can be considered as a distinct domain of labour as well. The original contribution of this review is to advance James's (1992) understanding to a new model of domains of labour (Figure 9).

2.3.1.2 Multiple sources of demand

In addition to identifying the domains of nursing labour, a key finding of this review is that nursing work includes more than patient care. A central issue in this meta-narrative is, where does the demand for work come from? Goddard (1953) divided nursing work into work that is required for all patients, and work that is specific to a patient because of an illness. Goddard's (1953) view persisted until Allen (2014) demonstrated how nurses manage priorities within a team and an organisation, *in addition to the needs of patients.* For example, Timmons and Tanner (2005, p. 88) found that nurses' work in the operating theatre focused on "keeping surgeons happy and not upsetting surgeons". These nurses faced considerable demand in their work that was not related to patient care. Nurses also spend a notable amount of time preparing for activities, and cleaning up afterwards (Engels et al., 1994).

This review demonstrates that nurses' work includes many things outside of patient care, which has not yet reached the mainstream nursing discourse. This may lead to the distinction between nursing care and nursing work, if nursing care is considered patient- or family- directed, and nursing work encompasses all the things that nurses do in their work setting. The model created from this meta-narrative review (Figure 9) reflects the reality that nurses do things that are not patient directed. The work that nurses do is for patients, but also for the whole healthcare system.

Researchers have identified that nurses' work comes from multiple sources of demand (Allen, 2014, Ebright, 2010) and that nurses' work changes in response to changes in the environment (Moores and Moult, 1977, Potter et al., 2005b). Goddard (1953) began by stating that nursing work was complex, but there was no theoretical lens to interpret this at the time. These ideas have been acknowledged by many authors, but there has been a lack of theoretical framework to conceptualise the dynamism and responsiveness of nurses' work. Developing a relevant theory would create a way to understand complexity and adaptation in nurses' work, which is explored in the next chapter of this thesis.

2.3.1.3 Social construction

What constitutes nursing work (and indeed, nursing research) has varied considerably across the timeframe assessed in this review (1953-2019). Goddard (1953) recorded one of the night nurses' duties was to draw lines on a sheet of paper so that they would be ready for day staff for documentation. From a modern perspective, this work is basic and demonstrates how significantly nursing work has changed. Other authors reported that what was

considered work was impacted by organisational norms (Diefendorff et al., 2011, Lundgrén-Laine et al., 2011), physician preferences (Quance, 2007, Timmons and Tanner, 2005), patient expectations (Elliott, 2017, Stayt, 2009), and social attitudes towards nurses (Capri and Buckle, 2015, Savage, 1997). Nurses' work has been determined by factors beyond nurses' expertise and official scope of practice.

The changes in nursing are evident in this meta-narrative through the paradigms of researchers. There are clear differences between domains of labour, such as emotional, which has largely been studied by researchers using the interpretive paradigm, and cognitive, which is almost entirely the EBP paradigm. These shifts demonstrate how nursing research has been influenced by different paradigms. Based on these findings, it is likely that nursing work will always be evolving, and understandings of nursing work will continue to develop.

2.3.2. Cognitive labour

There are several other noteworthy findings of this review. One is the creation of the concept of cognitive labour. This term was developed through this review, in response to the need to label the mental work of nurses. While physical, emotional, and organisational labour all had distinct definitions developed by researchers, cognitive labour had no equivalent. It is important to unite cognitive work like learning (Benner, 1982), critical thinking (Kataoka-Yahiro and Saylor, 1994), and stacking (Patterson et al., 2011) under a heading of cognitive labour, in order to acknowledge how nursing requires significant cognitive skill and knowledge. The term emotional labour encompasses nuanced perspectives, and unites authors around a central idea.

This may also be of benefit in cognitive labour, to present cognitive work as complex and difficult, along with other aspects of nursing. Discussions of cognitive stacking, or learning in nursing can continue in detail, with the benefit of being recognised as parts of a larger whole.

2.4 Implications and conclusion

The meta-narrative review of nursing work suggests that nurses use different domains of labour to care for patients and manage the healthcare system. These domains of labour are influenced by social factors, such as ideas of acceptable nursing work. While researchers acknowledge the variability and responsiveness of nursing work, the focus of previous research does not lend itself to understanding the complexity of nursing within and across a system. The next step from the learning of this review was to understand complexity in nursing work, to create a more robust model of how nurses' work is enacted. To explore how to understand complexity and adaptation in healthcare, the following chapter presents resilient healthcare theory, which it was anticipated would assist with a comprehensive understanding of nursing work.

3 Chapter 3: Scoping Review

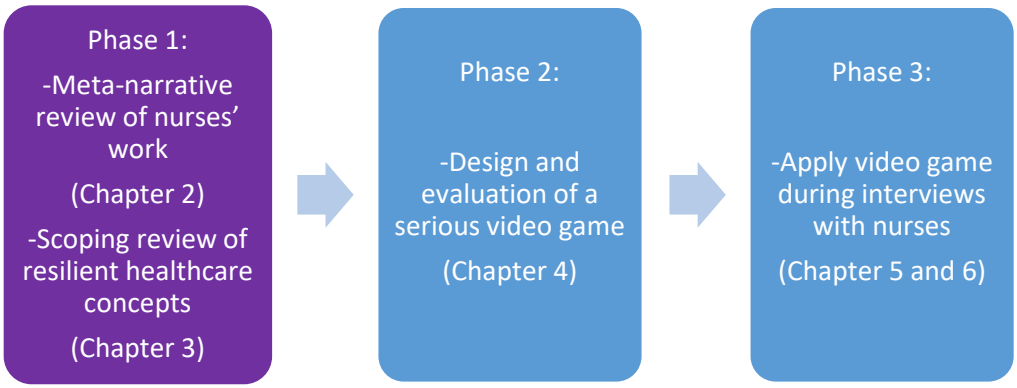
This chapter reports a scoping review of the resilient healthcare concepts of work-as-imagined and work-as-done, which are discussed in detail below.

3.1 Introduction to resilient healthcare

The previous chapter reported a meta-narrative review of nursing work, and the resultant model of nursing labour. Researchers identified the dynamic and challenging nature of nursing work. However, to date there has not been a theoretical frame to understand these qualities and present nursing work in a modern context. Resilient healthcare theory could support a new model of nursing work by understanding how nurses adapt to the variability and complexity inherent in healthcare systems. It emphasises the importance of adaptive capacity in maintaining safe, high quality care.

The objective addressed in this chapter was to map relevant resilient healthcare concepts for use as a theoretical lens to understand the complexity of nursing work, through a scoping review of work-as-imagined and work-as-done. This review scoped the current understanding of the concepts of work-as-imagined and work-as-done, to explore the breadth of evidence available on these topics. The purpose of this review was to assess whether concepts from resilient healthcare could aid in understanding nursing work, and whether the concepts could be feasibly utilized in this study. Figure 10 illustrates how this chapter fits within the rest of the thesis.

Figure 10: Location of Chapter 3 in the thesis



A new theory has emerged in safety science, broadly referred to as resilient healthcare. Resilient healthcare has been used to understand work in complex adaptive systems (Hollnagel, 2006) and can be viewed as a paradigm shift towards viewing human operators as a system's greatest asset, not its greatest liability (Hollnagel et al., 2015). Although humans have the potential to make errors, they also can prevent errors and solve complex, unexpected problems. Resilient healthcare includes several assumptions: systems are complex, work requires adaptation, and there is a difference between how work is planned and how work is done. These concepts are discussed further in this chapter.

Additionally, this chapter demonstrates why healthcare can be classed as a complex adaptive system. In the following section, the resilient healthcare concepts of work-as-imagined and work-as-done are proposed as a contemporary interpretive lens for understanding nursing work. The chapter reports a scoping review of the concepts of work-as-imagined and work-as-done in healthcare. The discussion considers the findings of this review, and their application to the next stages of the thesis.

3.1.1. Complex adaptive systems

Healthcare systems are complex adaptive systems (CAS), which are characterised by dynamic interactions, open systems, non-linear/emergent outcomes, and adaptation (Robson, 2015, Rouse, 2008). For example, an emergency department is open to receiving patients from any type of situation and it is difficult to predict exactly how many patients could present at the emergency department at any one time. Therefore, the department faces variable demand and must adapt in order to cope. Patients with the same diagnoses may respond differently to treatment, based on their own individual characteristics, requiring adaptation. Healthcare professionals have to change how they work in order to respond to unexpected circumstances, such as receiving mass casualties. These examples illustrate how the characteristics of CAS are present in healthcare, resulting in unpredictable work.

Framing healthcare as a CAS shifts away from the idea that errors are solely a product of human failure, and recognises the unpredictable interaction of many factors which may have unexpected consequences (Braithwaite et al., 2013, Hollnagel et al., 2015). For example, changes to an IT system could result in alerts that prompt nurses to give a medication erroneously. Insufficient staffing could mean that nurses were working in areas where they are not fully trained, and therefore unable to detect the error. In such cases, multiple contributory factors combine to cause an event. Actions within CAS have emergent properties, which are not easily anticipated (Wears, 2015). Changes that are made in healthcare systems may have consequences that are difficult to detect.

There are several reasons healthcare systems meet the criteria for CAS. Healthcare systems are adaptive to dynamic conditions, such as unexpected events in the community, in both potentially positive and negative ways (Braithwaite et al., 2013, Plsek and Greenhalgh, 2001, Woods, 2006). Complexity in healthcare systems manifests in many areas, including clinical settings (Wilson et al., 2001), managerial and administrative processes (Plsek and Wilson, 2001), and education (Fraser and Greenhalgh, 2001). There are many people involved in healthcare delivery, each with their own expertise and focus (Plsek and Greenhalgh, 2001). There are also no clear boundaries demarcating health and illness, and patients' health problems may not have obvious solutions (Plsek and Greenhalgh, 2001). Workers in a CAS have to negotiate competing priorities, such as different individual and collective goals (Wears et al., 2015) or efficiency versus thoroughness in their work (Hollnagel, 2009). Complex adaptive systems require work that is responsive to changing conditions, in order to manage unexpected demands. Therefore, adaptation of work is central in CAS, and is described in the next section.

3.1.2. Adaptation

It follows on from CAS that work in healthcare is variable, in order to respond to complexity. There are several ways of understanding adaptation in resilient healthcare. The complexity inherent in CAS means that adaptation of work is the norm, rather than the exception (Woods, 2006). While adaptation as such has received fairly little research attention in nursing, there are indications adaptations occur. For example, nurse researchers have identified how nurses change their work to respond to changes in their environment, such as shifting activities if there is a delay (Ebright, 2010, Patterson et al.,

2011). The emphasis on patient-centred care also indicates adaptations occur, because patients need individually tailored interventions to meet their needs (Dixon-Woods et al., 2014). Otherwise, nurses would be applying standardised protocols without adapting to patient requirements.

Adaptations include trade-offs, where nurses must accept one outcome over another (Wears et al., 2015). One sign that nurses have to make trade-off decisions is missed care, which is the omission of care because of time pressures (Ball et al., 2014). High numbers (86%) of nurses reported missed care on their previous shift in the UK (Ball et al., 2014). Emotional support is the most frequent missed care omission (Ausserhofer et al., 2014, Ball et al., 2014, Bittner and Gravlin, 2009). Trade-offs were likely required because of pressures in the work environment and staffing levels (Ausserhofer et al., 2014).

In addition to missing care, nurses use strategies like working unpaid overtime and skipping breaks to ensure that their work is done (Harvey et al., 2018). Nurses also use work-arounds, which are situations where nurses judge options and apply ‘fixes’ to achieve goals (Debono and Braithwaite, 2015, Debono et al., 2013). Work-arounds have been studied in nursing in the past decade (Debono and Braithwaite, 2015, Debono et al., 2013), meaning they may have been hidden in the past. Back et al. (2017) warn that adaptations may be pushed ‘underground’ if staff are penalised for not adhering to policies. These strategies are likely to have both positive and negative effects, for nurses and for patients. By understanding how nurses adapt their work, it is possible to understand these effects and their consequences. By surfacing

these adaptations, there may be opportunities to understand the demands of nursing and improve patient care.

3.1.3. Work-as-imagined and Work-as-done

In resilient healthcare, a shorthand for classifying work that occurs is work-as-imagined, and work-as-done. Work-as-imagined is what is anticipated will happen, under normal working conditions (Hollnagel et al., 2015). Work-as-done is what actually happens at the point of implementation (Hollnagel et al., 2015). In a clinical setting, nurses manage between the ideal scenario (work-as-imagined) and problems and challenges in systems (work-as-done).

Work-as-done and work-as-imagined rarely align (Hollnagel, 2017). This can be because the plans that are made in anticipation of needs do not represent the realities of healthcare delivery (Hollnagel et al., 2015). It can be because the nature of complex adaptive systems makes it impossible to anticipate all possible scenarios that could be part of work (Hollnagel, 2015). A goal in safety science is to understand the gap between work-as-imagined and work-as-done and support appropriate adaptation as needed (Anderson et al., 2017).

The concepts of work-as-imagined and work-as-done are a useful starting point for discussion about how work happens in CAS. In order to apply work-as-imagined and work-as-done in nursing, it is useful to know how these concepts have been studied and understood elsewhere. The following section reports a scoping review on the concepts of work-as-imagined and work-as-done in healthcare.

3.2 Work in resilient healthcare: A scoping review

The methodology selected for a literature review of work-as-imagined and work-as-done in resilient healthcare was a scoping review. The purpose of a scoping review is to present an overview of a phenomenon of interest (Arksey and O'Malley, 2005, Aveyard et al., 2016). A scoping review identifies the scale and shape of a body of research (Colquhoun et al., 2014, Grant and Booth, 2009). In fields where there is a lack of randomised controlled trials, scoping reviews are an effective way to understand the state of a science (Levac et al., 2010). Scoping reviews are well suited to literature that includes numerous research methods (Arksey and O'Malley, 2005, Levac et al., 2010, Tricco et al., 2016). Because of variability in study methods, scoping reviews do not attempt to weigh study outcomes, or evaluate the quality of studies (Arksey and O'Malley, 2005).

This review was needed because there have been varied perspectives on the concepts of work-as-imagined and work-as-done. Before these concepts could be applied as a theoretical lens to nursing work, it was important to establish a robust understanding of work-as-imagined and work-as-done. These concepts have been used separately and together, in empirical research and theoretical modelling. This review was conducted to establish what is known about work-as-imagined and work-as-done in healthcare, and how these concepts have been applied in research.

3.3 Method

There has been methodological development for scoping reviews. Arksey and O'Malley (2005, p. 22) outline five stages of a scoping review: identifying the research question, identifying relevant studies, study selection,

charting the data, and collating, summarising, and reporting the results. These stages guided this scoping review, and the following sections of this chapter present the review method in this format. Additional contributions to the methodology (Levac et al., 2010) and the PRISMA extension for scoping reviews (Tricco et al., 2018) were also drawn on to support rigour in review conduct and reporting standards.

3.3.1.1 Stage 1: Identifying the research question

The question guiding this review was, how have healthcare researchers applied the concepts of work-as-imagined and/or work-as-done? The review included various types of evidence addressing either or both of these concepts. The scope of the review was limited to healthcare, but not to a specific sub-population or context.

3.3.1.2 Stage 2: Identifying relevant studies

This review was approached in two different strands: journal articles from research databases, and monographs and book chapters. In the database searching, the search terms were "work*as*imagined AND/OR work*as* done" as keywords. These are the only known keywords used to describe these concepts, and thus additional search terms were not used.

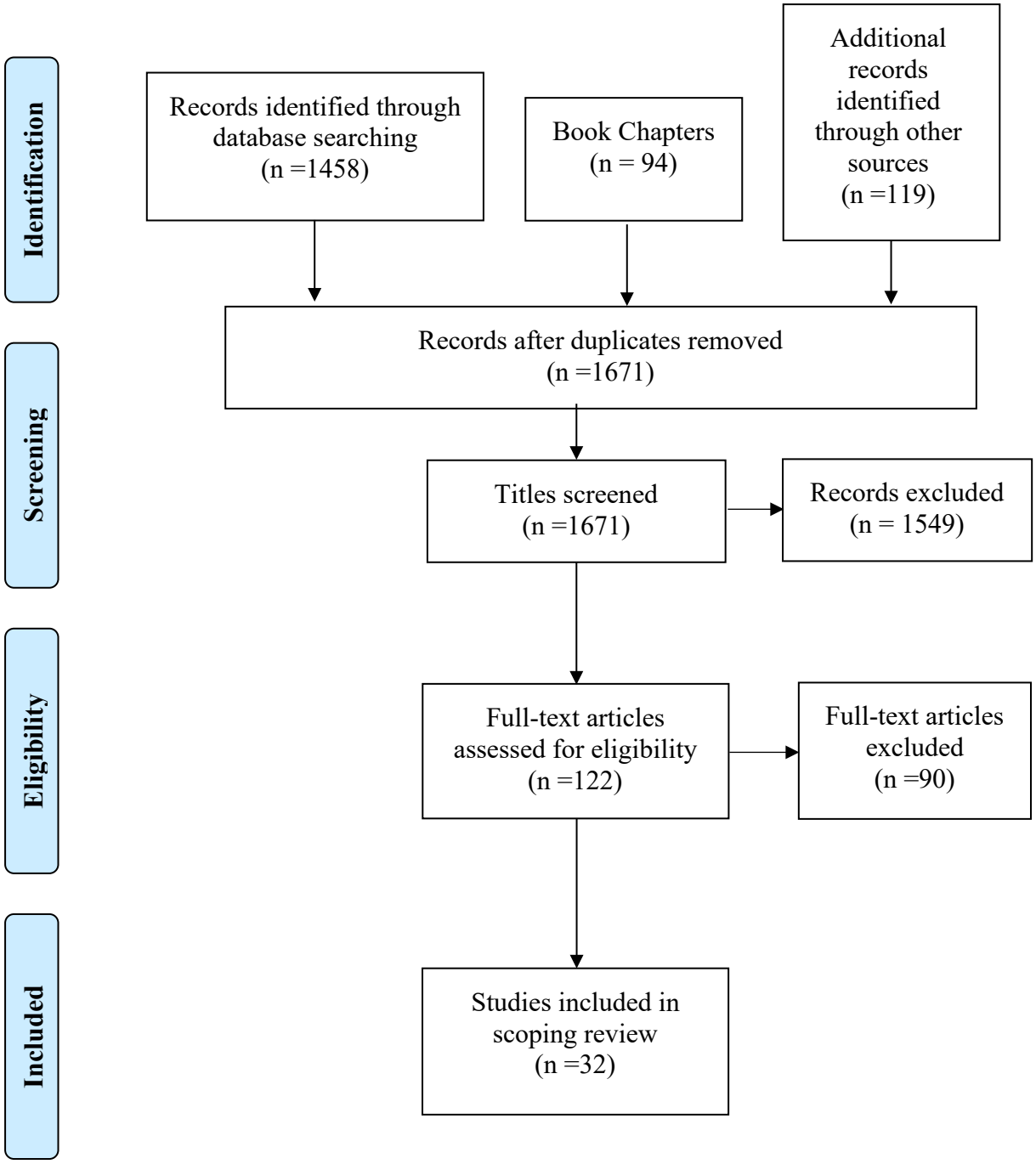
The databases searched were Web of Science, Scopus, Pubmed, CINAHL, Ovid (Medline/PsychInfo), and Google Scholar. These databases were selected based on the advice of expert library staff. Endnote software was used as a reference manager, to organise and track references during the review process. The most recent search was conducted on April 30, 2019. The articles included in this search are presented in Figure 11, based on PRISMA guidelines (Moher et al., 2009). Table 5 lists the articles included by source.

In addition to database searching, a variety of other techniques were used to locate relevant articles. Arksey and O'Malley (2005) and Levac et al. (2010) advocate drawing upon existing networks and knowledge communities to identify sources and articles for inclusion. For example, the journal Reliability Engineering & System Safety's special issue on resilience engineering was hand searched. Literature reviews on resilient healthcare were included for full text review, and the reference lists of studies were hand searched for additional sources (Patriarca et al., 2018, Patriarca et al., 2017). The seminal publication on the CARE model was also used as a starting point for citation tracing, as a known publication of interest (Anderson et al., 2016a). Four edited books on resilient healthcare were hand searched, by chapter. Resilient healthcare articles were suggested by colleagues, and these suggestions were hand searched. The titles did not necessarily use the identified search terms, but they were determined to be relevant through full text review. This search produced no duplicate articles to the database searching.

Table 5: Sources for articles in the scoping review

Method	Source	Initial Search	After titles screened	After full text screened
Hand searching	CARE model paper citations	27	7	7
	Colleagues	76	13	2
	Special issue 2015	16	8	1
	Hand searching	-	5	1
Database	Google Scholar	1450	35	0
	Ovid- Medline/PsychInfo	0	0	0
	CINHAL	0	0	0
	Pubmed	8	7	4
	Scopus	0	0	0
	Web of Science	0	0	0
Book Chapters	Concepts and precepts	23	23	0
	Resilient Health Care vol. 1	19	0	0
	Resilient Health Care vol. 2 Everyday clinical work	18	6	3
	Resilient Health Care vol. 3 WAI/WAD	17	17	13
	Delivering resilient healthcare	17	1	1
Totals		1671	122	32

Figure 11: PRISMA Diagram of scoping review



3.3.1.3 Stage 3: Study selection

Study selection was guided by inclusion and exclusion criteria, depicted in Table 6. The inclusion criteria were that articles had to be published after 2005 (the date of publication for the seminal works in the field), published in English, and available in full text.

Table 6: Inclusion/exclusion criteria for scoping review

Include:	Exclude:
-English -Full text available -Articles, books/book chapters -Publications after 2005	-Non-English -Full text unavailable -Legal decisions, syllabi, conference proceedings
-Resilient healthcare	-Resilience engineering, outside of healthcare -Studies not addressing work directly

Articles were excluded because they used the search terms but did not discuss the phenomena of interest, or because the articles were not related to healthcare. A decision was made to exclude articles that described examples of work-as-done, but did not use the named concept, because of the focus on using the concept.

There were also known archived conference presentations which may have been relevant to the topic. These were excluded because the presentations varied widely in style, and it was determined that data could not be meaningfully extracted from archived slides[2]. Articles that were excluded at

[2] This was true especially for presentations that employed a Pecha Kucha model, or emphasis on photos and images rather than writing on slides.

the full text stage were removed because they did not address the guiding question. Overall, 32 articles were included in the review.

3.3.1.4 Stage 4: Charting the data

Key data were extracted and recorded from each article. Extraction categories were drawn from Aveyard et al. (2016) guidance, and were further refined using the categories by Tricco et al. (2016). Literature was divided into empirical and theoretical articles. There were different extraction categories for each type of literature. For empirical articles, these data were extracted: citation, location, question/aim, participants, method, settings, themes/outcomes. For theoretical articles, these data were extracted: citation, type of article, central argument, main outcome. Articles were further organised based on the original research. For example, some studies had produced several published articles and book chapters. These were grouped together, but still counted as individual contributions in the reviews. The data extraction tables for these studies are depicted in Appendices F and G.

3.3.1.5 Stage 5: Collating, summarising, and reporting the results

Critical appraisal was not conducted during this process, as is standard procedure with a scoping review (Arksey and O'Malley, 2005). Critical appraisals are not conducted, as the purpose of the review is to map available evidence, rather than assess the quality of individual studies (Arksey and O'Malley, 2005). After these data from the studies were extracted and charted, the findings were organised and then summarised. The data extraction tables are included as Appendices F and G, and were based on Aveyard et al. (2016) recommended data extraction categories for scoping reviews of multi-method studies. These data extraction tables are included to demonstrate rigour in the

scoping review process. The findings of this review are reported in the following section.

3.4 Summary of findings

Hollnagel (2015) indicated that the concepts of work-as-imagined and work-as-done were first discussed around 2005. However, the first published examples of work-as-imagined and work-as-done in healthcare were printed in 2015. This review found a total of 32 articles: 14 theoretical articles, and 18 empirical articles. The details of these findings are displayed in the following sections.

3.4.1. Empirical studies

The majority of publications on work-as-imagined and work-as-done describe empirical research (Anderson et al., 2019a, Anderson et al., 2019b, Aubin et al., 2012, Back et al., 2008, Back et al., 2017, Clay-Williams et al., 2015, Damen et al., 2018, Hannigan et al., 2018, Nakajima, 2015, Nakajima et al., 2017, Nyssen and Betastegui, 2017, Patriarca et al., 2018, Patriarca et al., 2017, Ross et al., 2018, Rosso and Saurin, 2018, Saurin et al., 2017, Schnittker et al., 2019, Sujan et al., 2015a, Sujan et al., 2015b). These findings are presented in Appendix F.

The empirical studies focused on exploring work-as-imagined and work-as-done in the emergency department and among teams. All of the studies (reviews excepted) used interviews and either observations or focus groups to explore their subject. These studies took place in high income and upper-middle-income countries, as per the World Bank (n.d.) classifications of countries, using gross national income per capita. It is reasonable to assume that these healthcare systems are relatively well established and resourced.

One scoping review (Patriarca et al., 2017) and one systematic review (Patriarca et al., 2017) of resilient healthcare were included.

Many researchers have modelled clinical work using the Functional Resonance Analysis Method (FRAM) (Hollnagel, 2012). FRAM is a visual method of modelling systems, examining how different aspects of work connect. One of the advantages of FRAM is that it identifies specific points for intervention (Ross et al., 2018). Authors used FRAM to outline how work was done, and as a discussion tool with clinicians about how systems could be improved (Clay-Williams et al., 2015, Damen et al., 2018, Nakajima, 2015, Ross et al., 2018, Rosso and Saurin, 2018, Saurin et al., 2017). These studies illustrate complexity by creating models of socio-technical systems.

Overall, the empirical studies found clinical work to be complex, with many different actors and aspects of coordination. It was found that work-as-imagined differed from work-as-done, demonstrating that the concepts are empirically supported as being distinct. At times, elements of work that were designed to prevent errors ended up creating unforeseen problems (Nakajima, 2015). It was also difficult to move patients from one setting to another, as they had to transfer between systems of working (Hannigan et al., 2018, Sujan et al., 2015a, Sujan et al., 2015b). There was comparatively little focus on the consequences of work-as-imagined and work-as-done for individuals, with the exception of Nyssen and Betastegui (2017). This review found that there was a focus on overall system performance.

There was also an emphasis on the gap between work-as-imagined and work-as-done, and how planned work differs from enacted work (Anderson et al., 2019a, Anderson et al., 2019b, Anderson et al., 2016a, Back et al., 2017,

Clay-Williams et al., 2015, Damen et al., 2018, Hannigan et al., 2018, Nakajima, 2015, Nakajima et al., 2017). These authors detailed different aspects of this gap, with recommendations to improve training, create flexible policies, and support staff. This gap is also reflected in the theoretical articles, which are presented in the next section.

3.4.2. Theoretical articles

This review produced 14 theoretical articles, as displayed in Appendix G (Anderson et al., 2016b, Braithwaite et al., 2017b, Chuang and Hollnagel, 2017, Clay-Williams and Braithwaite, 2017, Hollnagel, 2015, Hollnagel, 2017, Hollnagel et al., 2015, Hunte and Wears, 2017, Johnson and Lane, 2017, Mannion and Braithwaite, 2017, McNab et al., 2016, Patterson et al., 2017, Sujan et al., 2017, Wears and Hunte, 2017). These articles were largely presented as book chapters, concentrating on how to align or reconcile work-as-imagined and work-as-done. Most authors focused on describing the nature of the gap between work-as-imagined and work-as-done (Anderson et al., 2017, Johnson and Lane, 2017, McNab et al., 2016), with some authors exploring what factors perpetuate the gap (Hollnagel, 2015, Hunte and Wears, 2017). In contrast, other authors focused on how this gap may be closed (Clay-Williams and Braithwaite, 2017, Patterson et al., 2017, Wears and Hunte, 2017). These authors argued that work-as-imagined should be the same as work-as-done, if the system is designed appropriately. These articles contrasted with other authors who did not believe alignment was possible, and would not necessarily produce better outcomes (Anderson et al., 2016a). The implications of these varied perspectives are discussed in the following section.

3.5 Discussion

The articles obtained from this scoping review of work-as-imagined and work-as-done demonstrate several clear trends. One of the key findings was that there is virtually no dispute about what the concepts actually are. Hollnagel et al. (2015) definitions of work-as-imagined and work-as-done are widely accepted. It is implied that there is physical and social space between those who generate work-as-imagined and work-as-done. Work-as-imagined is described as formal and translated through policies and procedures. In contrast, work-as-done is informal and ad hoc. The acceptance of these definitions has implications for other research in this area, as discussed below.

3.5.1. Focus on socio-technical systems

Many authors cited in this review focus on specifying systems, largely through FRAM modelling. The methods used were observation and interviews, with some authors drawing on considerable engagement with clinicians. Many authors have produced detailed descriptions of work-as-imagined and work-as-done, with highlighted opportunities to improve systems. There is also an emphasis on teams, but these are largely physician led teams, or groups of physicians. Chuang and Hollnagel (2017) found it difficult to translate resilient healthcare concepts to clinicians. It is unknown whether this difficulty was due to how the concepts were presented, or if the concepts were not truly relevant for clinicians. There is a relative neglect of nursing, in all but a few studies. Given the role of nurses in work-as-done, and their proximity to patients, this oversight is notable.

3.5.2. Emphasis on alignment and the gap

There is an emphasis on the gap between work-as-imagined and work-as-done in this review. Many authors highlight the need to align work-as-imagined and work-as-done. However, there is little discussion of what alignment, reconciliation or other terms would mean. Authors are not clear if this would result in increased specification of work-as-imagined, fewer rules for application in work-as-done, or something else. It is implied that the objective is not to force work-as-done to match sub-optimal policies, but it is not clear what the desired outcome of alignment would be. Furthermore, Anderson et al. (2016a) and Nakajima et al. (2017) explain that strict adherence to work-as-imagined is not a feasible solution. While the gap between and alignment of work-as-imagined and work-as-done has been a research focal point, this review found there is not a consensus on how to move forward.

3.5.3. Use of models

There are several different models and techniques used in the studies in this scoping review. Johnson and Lane (2017) published a model of Cs, but no articles were found that empirically tested this model. For this reason, this model was excluded from the potential approaches to the current study. Many authors used FRAM techniques for modelling work, but these are highly specific to their given context and the problem they are addressing. FRAM modelling appears to be very useful for exploring work in a given context, but not necessarily creating transferrable models. FRAM was not used in this study, because the aim of this study was to understand nursing work broadly, and a context dependent FRAM model would not suit this purpose.

In contrast, the CARE model has an empirical basis (Anderson et al., 2019b, Anderson et al., 2017, Anderson et al., 2016a, Back et al., 2017). The CARE model was chosen for use in the current study because of its empirical support. The CARE model enables broader understanding of systems of everyday clinical work, that are not context specific. Additionally, the CARE model is the only model in this review that had included nurses as part of the study participants. These reasons supported the decision to use the CARE model as the resilient healthcare lens for this study.

Overall, this scoping review demonstrates that there is a complement of literature on work-as-imagined and work-as-done in healthcare, which has been developing since 2015. The concepts of work-as-imagined and work-as-done have empirical and theoretical publications supporting their relevance in a variety of clinical areas. The findings of this review support the concepts as an effective means of articulating complexity in healthcare.

This review also illustrates where there are opportunities for additional research. There is limited evidence surrounding work-as-imagined and work-as-done for nurses, which is notable as nurses form the largest portion of the healthcare workforce. There is also the opportunity to study the experiences of work-as-imagined and work-as-done for workers, and what it is like to manage these tensions in clinical work. There are also opportunities to consider the appropriateness of the definitions of work-as-imagined and work-as-done as part of resilient healthcare. The findings of this review highlight an opportunity to fill these gaps by studying work-as-imagined and work-as-done with nurses.

3.6 Limitations

There is a key limitation in this scoping review. Namely, it was difficult to identify relevant studies, because of inconsistent use of the keywords and extensive publication in edited books. Some articles provided relevant perspectives but did not include the key words in their titles. Consequently, it would be useful for more authors to adopt standardised titles to support integration of work-as-imagined and work-as-done into knowledge syntheses. The concepts of work-as-imagined and work-as-done have only been published empirically since 2015, so it was accepted that the field is developing and that the articles for inclusion would not be only journal articles.

3.7 Conclusion

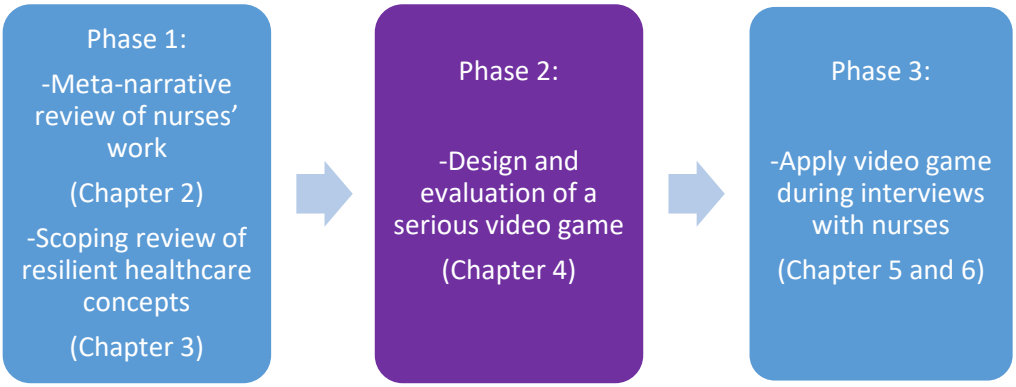
This review indicates that resilient healthcare may act as a lens for understanding nursing work. Framing nursing work in the context of a complex adaptive system may provide a theoretical lens to highlight variability and adaptation in nursing work. This has been a limitation from previous nursing research, where researchers acknowledged the complexity of nursing work, but lacked a theoretical means to understand and study this complexity. The concepts of work-as-imagined and work-as-done, as operationalised in the CARE model, may be an effective way to interpret complexity in nurses' work. But do these concepts apply to nurses' experiences? Furthermore, can nurses relate to and understand the ideas from resilient healthcare? Before studying nursing work itself, it was necessary to assess whether resilient healthcare was an appropriate lens for interpretation, and explore whether the concepts of work-as-imagined and work-as-done

were meaningful for understanding healthcare work. The next section of this thesis presents the operationalisation of this theory, and development of a video game to elicit nurses' understandings of their work as an exploratory approach to bringing nursing work and resilient healthcare together.

4 Chapter 4: Creating and Evaluating a Serious Video Game

The concepts of resilient healthcare, such as adaptation and complexity, are developing empirically. However, there has been limited engagement with healthcare professionals to share these ideas. One study found that resilient healthcare has been difficult to translate to healthcare professionals, as the connections between theory and practice were not always apparent (Chuang and Hollnagel, 2017). A serious game or video game may overcome these limitations, and demonstrate the role of theory in meaningful clinical examples. In this chapter, there are descriptions of the aim, methods, findings, and a discussion on the evaluation of the resultant video game, *Resilience Challenge* (game.resiliencecentre.org.uk). Resilient healthcare has become the preferred term for this theory, but at the time of development of the video game, the concept used was 'organisational resilience'. The terms resilient healthcare and organisational resilience can be considered interchangeable in this phase of the research. This chapter reports Phase 2 of the thesis, illustrated in Figure 12.

Figure 12: Location of Chapter 4 in the thesis



4.1.1. Introduction to serious games

Serious games is an academic discipline, which uses gamified tools to support learning and engagement (Iacovides and Cox, 2015, Lu, 2013). Video games was an appropriate medium for this study because evidence indicates serious games promote reflection (Iacovides and Cox, 2015, Khaled, 2018, Mekler et al., 2018) and influence attitudes and behaviours (Connolly et al., 2012).

Many serious games focus on specific skills and activities. In healthcare, serious games have been used successfully with healthcare professionals to support various aspects of clinical work. These include training in surgical procedures, assessment, patient skin integrity, and reading electrocardiographs (Ricciardi and Paolis, 2014). Iacovides and colleagues (Iacovides et al., 2019, Iacovides and Cox, 2015) explored the use of different games to raise awareness of blame culture in healthcare. Additionally, Hannig et al. (2012) reports the development of *eMedOffice*, a game which introduces medical students to system challenges that can impact their work. There are also examples of virtual patients, which enable students to simulate patient care by progressing through digital clinical scenarios (Guise et al., 2012a, Guise et al., 2012b). These examples indicate that games can serve as tools for engagement, reflection, and learning for healthcare professionals.

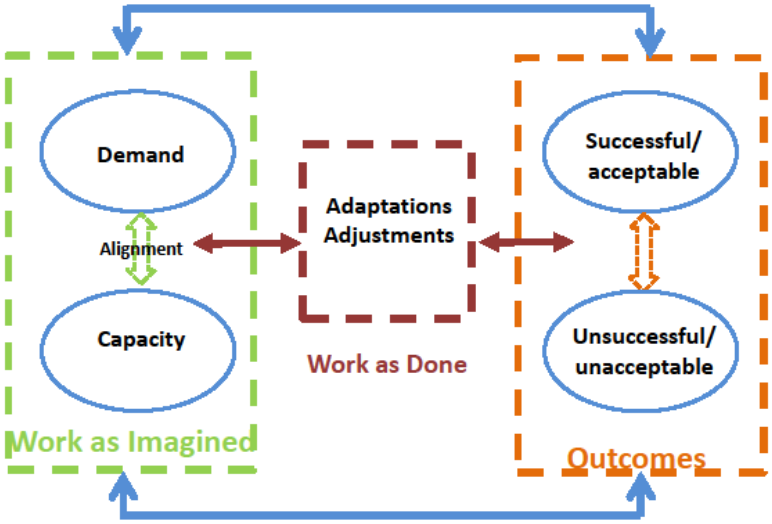
4.1.2. Introduction to the CARE model

Resilient healthcare has many different concepts, and it was necessary to select specific ideas to translate in the game. The Concepts for Applying Resilience Engineering (CARE) model (Anderson et al., 2016a), as discussed

in Chapter 3, models adaptation in healthcare at the point of delivery, so it is directly applicable to nurses' work and was chosen for this study (Figure 13).

The CARE model was developed to define and operationalise resilient healthcare principles to enable scientific study. Outcomes emerge from misalignments between demand and capacity that generate the need for adaptation. Work-as-imagined does not always reflect the reality of clinical environments. For example, patients can be late, staff can be on leave and not replaced, equipment can be missing and so forth, requiring staff to adapt their work (Anderson et al., 2016a).

Figure 13: CARE Model of Organisational Resilience



From Anderson et al., 2016a

Adaptations of work or 'adjustments' are termed work-as-done, reflecting what actually happens in everyday clinical work. Adaptation can lead to either successful or unsuccessful outcomes, based on emergent system conditions. Success is relative in this context; what may be acceptable for a healthcare professional is not necessarily acceptable for a patient, and what works one day may not work the next. The framing of complex adaptive systems and dynamic adaptation of work may overcome limitations from previous research, where it was not possible to capture these examples in nurses' work. The concepts of the CARE model provided the basis for developing the video game.

4.2 Aims and objectives of Phase 2

The objectives of this chapter were to operationalise and test the understanding of concepts from resilient healthcare theory in a serious video

game. The concepts used were those extracted from the scoping review in the previous chapter. The domains of labour from the meta-narrative review (Chapter 2) were also used to create the game, by representing different types of labour in the game's scenarios.

Further, the objectives of this phase of the thesis were to evaluate the serious video game, to establish feasibility and acceptability of the game for use with healthcare professionals, using a survey and the framework analysis methodology. These objectives assessed whether the theory was relevant and engaging for healthcare professionals. The evaluation of the game would also provide empirical evidence of its suitability for use in further phases of the study. In order to manage the numerous aspects of Phase 2, a set of sub-objectives was developed:

a) Extract meaningful concepts from resilient healthcare theory, and create realistic, everyday scenarios.
b) Design a video game that is engaging, using these scenarios.
c) Implement and disseminate the video game through social media, blog posts, presentations, and conferences, to reach clinical audiences.
d) Evaluate the acceptability of the game and elicit reflections from healthcare professionals on whether theoretical concepts relate to their clinical practice.

A secondary aim was to assess the usefulness of resilient healthcare theory for further study of nursing work. The following section provides background for *Resilience Challenge* and how it was developed.

4.2.1. *Resilience Challenge* overview

Resilience Challenge is a scenario-based game where a player makes decisions that guide a patient's journey through a hospital. In each of the five scenarios, the player must address realistic clinical dilemmas, and choose from three options to respond to the scenario. The options presented are not ideal insofar as all options require an element of adjustment from what would be considered best practice. The player must decide which option they think is most acceptable, as they journey with the patient.

For example, in the first scenario, a patient needs to be transferred out of the emergency department but there is no bed on the appropriate ward. The player must choose between keeping the patient in the emergency department, moving the patient to a different ward, or moving the patient to a hallway. Figure 14 presents an image from *Resilience Challenge*, where the patient is waiting in the emergency department.

There is only one path, or set of responses, that allows a player to move through the game. When a response was chosen, the players receive feedback about their answer and why it was or was not the response that advances the game. Players may choose different responses until they select the response that advances the game. The feedback that is provided explores the implications of each option, to prompt reflection from the player. An overview of the scenarios in the game is provided in Table 7, with the responses that advancethe game listed in bold.

Table 7: *Resilience Challenge* scenario summary

Scenario	Player's Role	Options
Emergency department. Patient about to breach a 4-hour waiting target. There is a bed available but it is not on a medical ward. How do you respond? *(Organisational labour)*	Nurse administrator	-Move patient to the hallway **-Send patient to orthopaedic ward*** -Keep patient in ED and accept the breach penalty
Orthopaedic ward. Patient appears to be septic. Other patients are waiting to be seen. How do you respond? *(Cognitive labour)*	Doctor	-Go see the patient immediately -Finish rounds, then see the patient **-Give the nurse a telephone order for the sepsis protocol, and see the patient after delegating to a colleague**
X-Ray department/ ward. Patient has returned from X-ray to the ward. He is delirious and restless. He needs to be returned to bed. How do you respond? *(Physical labour)*	Registered Nurse	**-Slide the patient across a board to bed** -Use a hoist to move the patient -Assist the patient to ambulate to bed
Ward. Patient requires pain medication, which is not available on the ward. How do you respond? *(Cognitive labour)*	Registered Nurse	-Wait until the next day for a colleague to give medication **-Call another ward to ask if they have the medication** -Call the doctor and ask for an alternative
Ward. Patient is worried about discharge, and family is unable to provide support. Patient wants to speak about it during medication round. How do you respond? *(Emotional labour)*	Registered Nurse	-Stop and talk to the patient -Tell the patient to wait for a family meeting **-Tell the patient you will speak to him after the medication round**

*Response advancing the game is listed in bold

Once the game has finished, players are asked to reflect on their choices, and the potential impact of these choices in a real clinical setting. The game takes about three minutes to play, and is freely available online for anyone to

access. There is an ambient soundtrack that accompanies the game, to simulate a busy clinical environment. At the end of the game, the patient has improved, and thanks the player for their care.

4.2.2. Designing a video game

Resilience Challenge was created through a series of stages. The initial setup, planning, development, launch, and evaluation of *Resilience Challenge* are summarised in Table 8, and described in more detail in the following sections. This work was completed through collaboration between nurses, safety scientists, a serious games expert, and a digital arts studio.

Table 8: Stages of Video Game Development over 7 months

Initial setup	-Apply for and receive funding -Attend Serious Games conference -Write project brief and recruit agency bids, including social media marketing strategy -Write and broker contract
Planning	-Review best practices/research literature around serious games -Review resilient healthcare literature and identify key concepts -Meet with game developers to outline project -Host afternoon workshop to develop scenarios, with 2 nurses, a safety scientist, a serious games expert, and a digital arts studio -Create storyboard of the game and develop narrative script -Provide developers with contextual information, and images of hospitals
Development	-Refine game narrative script -Design game process and develop pilot -Extensive user testing, including a focus group -Provide iterative feedback to developers about game design, including accuracy of medical imagery -Ensure characters in the game represent healthcare workforce diversity (e.g. ethnicity, gender) -Develop and pilot evaluation survey for the game
Launch	-Approve final version of game -Design social media strategy -Write blog and social media posts -Plan and host launch events
Dissemination	-Publicise game on social media -Present game to stakeholders, including attendees at resilient healthcare workshops (9 presentations, Feb 2017-Sept 2018) -Write and publish blog posts on various websites (9 to date) -Email game link to healthcare and safety staff mailing lists -Promotional game postcards distributed with QR code
Evaluation	-Complete evaluation of game content and process, using survey available at the end of the game (Feb-June 2017)

4.2.3. Initial setup

The process of creating *Resilience Challenge* took approximately seven months. It began with an application to the Cultural Institute at King's College London for the competitive Arts in Health and Wellbeing scheme (£10,000). The game was funded, and formal development began. Early formative work included attending a serious games conference, connecting with a digital arts studio, and identifying academic partners. A condition of the funding was that the process for collaboration was competitive, and solicited multiple bids.

I attended the regional Games for Health conference, which focused on serious games in healthcare. The conference provided the opportunity to connect with industry partners, and review best practices for serious games in healthcare. It helped me to refine the brief for the agency and our requirements for developers.

I advertised the job opportunity to develop the video game in multiple locations. I designed and implemented a social media strategy that included promoting the brief on Facebook, Twitter, Instagram and four local job boards. Agencies were required to submit a package depicting their ideas for the game, and projected budget and timelines. Three agencies put forward a bid, which I evaluated using a scoring rubric. The bid from Karman Interactive Ltd. was far more extensive, comprehensive, and creative than the others. I hired them as our industry partners.

I wrote and brokered the collaboration contract to bring together the Cultural Institute, Karman Interactive Ltd. and the Centre for Applied Resilience in Healthcare. This included the development of legal disclaimers,

funding terms and conditions, and a timeline for outputs. This part of the process enabled the planning stage to move forward.

4.2.4. Planning

I determined that five scenarios were a feasible number to create a storyline for the game, and stay within the allotted financial budget. I followed current serious video game best practices by creating an overarching narrative centred around a single character (the patient), and requiring decision-making along the patient's journey in the hospital.

An initial workshop was held to develop the game's narrative, which was refined during development and testing. This workshop was attended by a serious games expert, a safety scientist, and two nurses. The workshop began by outlining the aims of the video game, which were to operationalise and test resilient healthcare theory concepts, and have healthcare professionals evaluate the game.

The scenarios for the video game were developed by starting with the concepts of work-as-imagined and work-as-done. These concepts were included by making the choices in the video game reflect actual clinical scenarios, where compromise, trade-offs, and work arounds were required. Thus, the game directly applied resilient healthcare theory by creating scenarios where there was no 'ideal' response, and that work-as-done had to differ from work-as-imagined. The CARE model was used in each scenario by creating the gap between work-as-imagined and work-as-done, and requiring the players to adapt their work in order to advance the game. For example, in the first scenario, a preferred response would be to send the patient to a medical ward within the ED target. By presenting a scenario that does not

offer this option, the video game creates a gap between work-as-imagined and work-as-done that the player must address. Thus, *Resilience Challenge* was able to learn more about players' perspectives on the concepts of work-as-imagined and work-as-done.

These scenarios were also based on the domains of labour identified through the meta-narrative review in Chapter 2. There was one scenario for physical, emotional, and organisational labour, and two scenarios for cognitive labour (to create five in total). Each scenario highlighted an element of nursing work that represented that domain of labour, to ensure that players had to consider the breadth of nursing work during the game. The combination of the domains of labour and work-as-done formed the basis of these scenarios.

The scenarios were also informed by my role as a disabled researcher. I have been both a nurse and a patient throughout my adult life. My disabilities mean that I have experienced the NHS as a patient, as well as a researcher. I have had multiple admissions for shortness of breath, much like the patient in the video game. I could relate to the scenarios in *Resilience Challenge*, and ensured that they were realistic from both a patient and nurse standpoint.

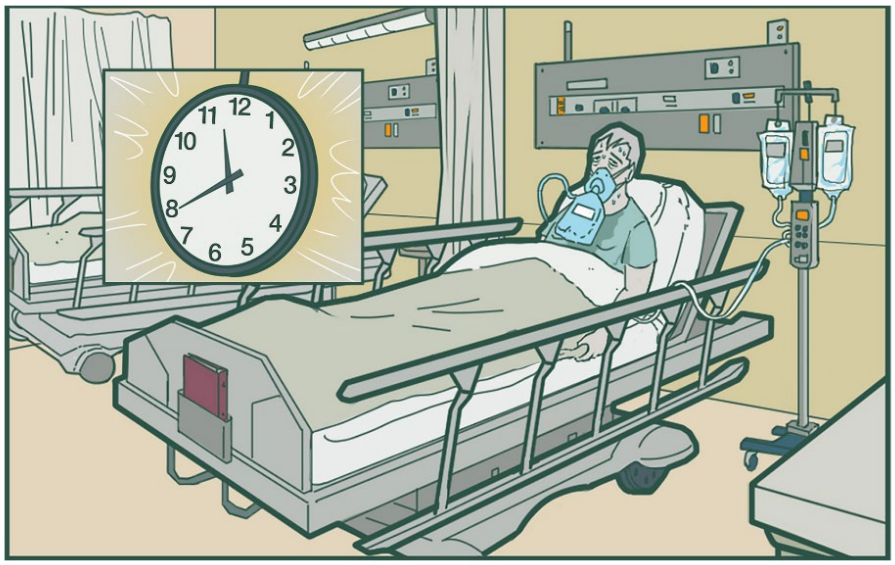
In the workshop, we developed clinical scenarios that aligned with this theory. We drew upon our lived experiences as patients, carers, and healthcare professionals, to ensure that the scenarios were accurate. These examples were sent as a draft script to Karman Interactive Ltd., the digital arts collaborator, to explore how the scenarios could be presented.

4.2.5. Creating the game

Considerable attention to detail was paid during the creation of *Resilience Challenge.* To create the visuals, I drew on real life examples of

hospital settings and equipment. *Resilience Challenge* was specifically designed to use highly accurate medical imagery, which was juxtaposed with a comic-book style of illustration. This was done to create a familiar environment where clinicians would apply their knowledge from practice. I sent the collaborators at Karman photos of hospitals and medical equipment from the United States, Canada, and the UK. I provided feedback on each image to ensure that the images were medically accurate.

Figure 14: Image from *Resilience Challenge*



I also ensured that the images reflected the storyline, and the patient's improving health status. For example, the patient arrives from the ambulance wearing a non-rebreather mask, and as his medical condition improves, the oxygen equipment is reduced, then taken off when no longer needed. All of the oxygen equipment in the game is drawn directly from the equipment used daily in the NHS. The characters in the game were also specifically styled to reflect the diverse workforce in the NHS.

In addition to the realistic images, the game is accompanied by a soundtrack. The sounds are from a busy area, with beeping that is similar to

hospital equipment. The soundtrack is a blend of two audio files that gets progressively calmer over the course of the game. This is intended to subliminally represent the patient's trajectory, as his health improves in response to the participant's decisions. The soundtrack is also unique in that it is asynchronous with the game; the sounds do not correspond or respond to any of the participant's choices. In most video games, sound is associated with a player's actions. For example, one pushes a button, and it makes a noise. The asynchronous soundtrack mimics a real-life hospital and reflects the patient's status.

There was very deliberate attention paid to the activities in the scenarios. I chose to make the scenarios follow a routine care pathway, because the purpose of the game was not to evaluate clinical knowledge. Had the scenarios been medically difficult, the focus would have been on managing biomedical needs and not on the complex decisions needed to manage patient care. The scenarios deliberately present options that require nurses to weigh the potential consequences of different decisions, and choose what is best for the patient and the system. By prompting this critical thinking, it was possible to explore how nurses prioritise different options during their work. This technique enabled the findings of this study to capture elements of nursing work that were not possible to study in other conditions.

4.2.6. Pilot testing

The game script and storyline were refined through an iterative process of user testing and development. The script of the game went through 12 iterations, with feedback from ongoing user testing. The script changed to improve the clarity of the scenarios and ensure the terminology used was

appropriate for a clinical, international audience. The initial pilot of the game included a different scenario three, asking about sending the patient for an x-ray, rather than the final scenario of moving the patient to bed. This scenario was changed because of the feedback and user testing, to better highlight the work of nurses in the game.

I tested the game with colleagues to appraise the content of the game, the process of playing it, and the game's stability across different devices and web browsers. The game was refined iteratively based on this feedback. I communicated with the game developers on an almost daily basis about refinements to the game, changes to the images and more.

The user testing was an intensive process, that included playing the game with 43 people. I sat alongside volunteers as they played the game on an iPad and observed how they played. These volunteers were friends who were both healthcare professionals and members of the public. I observed, did they know which buttons to push? Did they understand the instructions? How did they react to the scenarios? I made notes such as, 'make lead button larger and a different colour', and provided this feedback to Karman Interactive. We had daily exchanges and modifications to the game to make sure users were consistently able to navigate through the game without technical challenges. The users also verbally indicated that they wanted the patient to get better, and they were glad they had selected the optimal choices. These comments indicated that there were no distractions in the game design, and that the users could focus on the storyline and the concepts. At this point, the game was launched.

4.2.7. Launch

The final version of the video game was released online in February 2017. A promotional strategy was created to share the game across a variety of knowledge communities. This included posts on social media, a website, and printed postcards that were distributed at various events. There were also blog posts about the game on a variety of websites. These efforts were to ensure wide dissemination of the game, to encourage healthcare professionals to participate in the evaluation.

A launch event was held at a Faculty of Nursing, Midwifery & Palliative Care, where nurse participants heard about the game, and played the game as a reflective exercise. This event presented an opportunity to receive live, informal feedback about the game and its potential use with healthcare professionals. There were also various similar sessions at conferences and a resilient healthcare masterclass. This session provided in-person feedback that the game was useful for eliciting reflections on nursing work. The game was formally evaluated, which is described in the following section.

4.3 Game evaluation method

Participants who played the game had the option of completing an online survey immediately after finishing the game. The purpose of the survey was to evaluate the content of the game and the process of playing it. The content refers to the scenarios, the options presented to players, and the overall narrative of the game. Process refers to factors like the sounds, images, pacing of the game, and the experience of playing. In this section, there are descriptions of the participants, data collection, and analysis strategies.

4.3.1. Ethical considerations

Full ethical approval from the Florence Nightingale Faculty of Nursing, Midwifery & Palliative Care at King's College London was obtained on November 3, 2016, LRS-16/17-3787 (Appendix H). There were no known risks to participating in this research. Participants were required to confirm that they had read an informed consent information page before completing the survey.

4.3.2. Data collection

The sample for the evaluation of *Resilience Challenge* was a convenience, purposive sample (Palinkas et al., 2015). There was a link to the survey at the end of the video game, which led to the survey. *Resilience Challenge* was shared widely online, through personal social media accounts, organisational accounts (i.e. King's College London and the Cultural Institute at King's), and blog posts (nine known articles on various websites). The survey was disseminated through its connection to the game, and was not shared independently. Thus, anyone who reached the survey had already played *Resilience Challenge.* The survey was open to nurses, healthcare professionals who were not nurses, and the public, to solicit a range of feedback.

The survey to evaluate *Resilience Challenge* contained 12 questions for healthcare professionals. There were also eight survey questions for members of the public who responded. The surveys are presented in full in Appendix I. There were no known validated tools available to evaluate the video game, so it was necessary to create the bespoke survey for this thesis. *Resilience Challenge* is publicly available online, and was advertised on social media. *Resilience Challenge* was implemented publicly to meet the requirements of

the funder, and enable maximum potential views of the game. As a consequence, it was anticipated that members of the public would also access the game, and they were provided with the opportunity to answer a branch of the survey at the end of the game. Both groups could click on the same link, and after reading an ethical consent page, a screening question directed participants to either the healthcare or members of the public branch of the survey. The survey questions were created in consultation with the research supervisors, who have extensive experience with survey development. Both versions of the survey were piloted with five colleagues for written and verbal feedback, to establish a measure of face validity prior to implementation. As the survey was only used at one time point, it was not possible to test the reliability of the measures.

The healthcare professional survey consisted of four demographic questions, followed by six Likert-type questions, asking participants to rank their agreement with statements about the game on a five-point scale from Strongly Agree, to Strongly Disagree. Finally, there were two open ended questions: a) Has playing the game caused you to reflect on your own practice? If so, in what ways? and b) Do you have any other comments regarding the game? At the conclusion of the survey, participants were also offered the link to the Centre for Applied Resilience in Healthcare website for more information on resilient healthcare. Additionally, analytic data from the website were automatically generated as descriptive statistics. These measures provided a broad range of feedback from nurses, non-nurse healthcare professionals, and the public.

4.3.3. Data analysis

The surveys contained both quantitative and qualitative data. The fixed-response questions were analysed with descriptive statistics, using SPSS (v22).

Framework analysis (FA) (Gale et al., 2013, Smith and Firth, 2011) was used to analyse findings from the free-text responses in the survey. The CARE model (Anderson et al., 2016a), shown in Figure 13, was used deductively. Inductive themes were also created when these data presented concepts not included in the CARE model. The NVivo (v12) software management tool was used to organise these data. The analysis is described in more detail below.

FA is a method of qualitative data analysis with origins in policy research (Ritchie and Spencer, 2002). It enhances rigour through transparent data organisation (Swallow et al., 2003, Ward et al., 2013). FA contrasts with other methods of qualitative data analysis because it includes deductive analysis from known theories and frameworks (Ward et al., 2013). FA begins with a structured guide for data analysis (Smith and Firth, 2011). FA is well suited to cross-sectional, descriptive data (Ritchie et al., 2003), which is the nature of these data. In this study, parts of the CARE model formed the basis of the coding framework, starting the deductive analysis (Table 9).

Table 9: Definitions for deductive coding framework

Demand	"pressure in the clinical environment and includes requirements for effective care, such as the targets and standards set by regulators and policy makers" (Anderson et al., 2016b, p. x).
Capacity	"a range of capacities, including numbers of staff, their skill mix, physical infrastructure and equipment, processes, procedures and protocols" (Anderson et al., 2016b, p. x).

Adaptation	"mismatches of demand and capacity that require clinicians to work around problems and devise solutions" (Anderson et al., 2016b, p. x).
Outcomes	"...broadly viewed, and include consequences for patients, staff and the organisation" (Anderson et al., 2016a, p. 3)
Resilience	"the ability of a healthcare system (a clinic, a ward, a hospital, a country) to adjust its functioning prior to, during, or following events (changes, disturbances, opportunities), and thereby sustain operations under both expected and unexpected conditions" (Hollnagel et al., 2015, p. xvii).

The concepts from the CARE model (Anderson et al., 2016a) formed the basis of the coding framework (Smith and Firth, 2011). Sub-themes and inductive themes were added to the coding matrix, to reflect the nuances of the main themes and add depth to the framework (Ward et al., 2013). Each comment was read, and coded to the themes from the deductive coding framework, if applicable. Next, comments were re-read several times and themes were created inductively to add to concepts from the framework in more depth, or illustrate concepts inductively. An example of inductive themes included comments on the game elements (i.e. colours or soundtrack), and connecting the ideas in the game to clinical practice. The data analysis proceeded through several cycles of re-reading and refining themes. During this process, records of reflective thoughts were kept in a journal, to ensure transparency (Smith and Firth, 2011).

At the conclusion of data analysis, the five deductive themes derived from the CARE model were supported and retained, and four inductive themes were also developed and added during data analysis. The inductive themes provided different elements of the participant reflections on the process of playing the game and reflections on their work. These inductive themes did

not contradict the findings from the deductive themes. While some participants argued forcefully that they did not agree with the 'optimal' choice the game presented, they did support the idea that work-as-imagined does not always translate to work-as-done. In this way, the comments from the analysis reinforced the concepts illustrated in the CARE model. The statistical results of the survey are presented below, followed by the qualitative findings from the free-text comments.

4.4 Results: Quantitative data

This section presents the results from the website analytics, and responses from the fixed-response portion of the survey. The results are divided by the two branches of the survey: healthcare participant responses and non-healthcare participant responses. Each is presented separately below.

4.4.1. Analytic and demographic data

The website hosting the game was designed with automatic analytic capacity to monitor how many times the game was played and geographically where the game was played. These data are presented in Table 10. The top five locations accounted for 86% of the total game plays. Please note that the N value varies in the tables in this section, as not all participants answered every question.

Table 10: Gameplay analytic data

Location	Number	Percentage (where applicable)
United Kingdom	1,230	63%
United States	145	7%
Canada	122	6%
Australia	111	6%
Belgium	80	4%
Other	261	14%

Total Game plays	1,949
Number of Unique users	1,559

Overall, 141 participants completed the survey, from February 2- June 8, 2017. There were 107 female participants (76%) and 34 male participants (24%) in the study. The mean age of participants was 40 years (N=103, SD 1.8 years). Of the 141 participants, 107 self-identified as healthcare professionals, and 34 participants were members of the public. Table 11 displays the professional role of participants, where 99 of the 107 healthcare professional participants provided this information.

Table 11: Professional roles of healthcare participants

Role	No of Participants	Percentage
Registered Nurse	54	54.5%
Other Healthcare Professionals		
Students	11	11.1%
Physicians	13	13.1%
Midwives	4	4.0%
Other roles	17	17.0%
Total	99	

The video game was successful in reaching nurses, as well as other healthcare professionals. The following sections identify the quantitative responses from healthcare participants and non-healthcare participants.

4.4.2. Healthcare professional responses

There were 107 participants who self-identified as working in healthcare settings. These participants responded to three questions about engaging with the game, and three questions relating to the content. The responses to these questions are displayed in Table 12. These questions assessed whether the game translated concepts from resilient healthcare effectively, and if the game was engaging

Table 12: Survey responses from healthcare workers

	Disagree		Somewhat Disagree		Neither Agree nor Disagree		Somewhat Agree		Agree	
Item	N	%	N	%	N	%	N	%	N	%
The game is relevant to my work	1	1	6	6	12	11	31	29	57	53
The game is engaging	1	1	1	1	6	6	34	32	65	61
I would recommend the game to others	0	0	2	2	10	9	26	25	68	64
Playing the game increased my awareness of how clinicians adapt safely at work	5	5	9	8	17	16	32	30	44	41
Playing the game helped me think through the impact of my actions on patient safety	1	1	4	4	13	12	33	31	56	52
The game introduced me to the concept of organisational resilience	12	11	8	8	18	17	39	36	30	28

Overall, healthcare participants found the game to be relevant, engaging, and would recommend the game to others. Participants also agreed that the game increased awareness about adaptation and the impact of their actions on patient safety. These results indicate that video games could have a potential impact on behaviours relating to patient safety.

Comparatively fewer participants agreed that the game had introduced the concept of organisational resilience. There may be several reasons for this. One reason could be that anecdotally, the collaborators from Karman Interactive indicated that game players usually skip content at the beginning of any app or video game in order to jump to the game. In *Resilience Challenge*, the information about organisational resilience was presented at the beginning of the game, and may have been skipped through by some participants. Organisational resilience was not named directly in the game's scenarios, in an effort to keep text in the game minimal. For this reason, participants may have engaged with the ideas of organisational resilience, but not connected the ideas to the name of the concept.

4.4.3. Public responses

There were 34 self-identified members of the public who completed the survey. They were asked two questions about healthcare scenarios, and two questions about engaging with the game. Their responses are presented below in Table 13.

Table 13: Survey responses from members of the public

	Disagree		Somewhat Disagree		Neither Agree nor Disagree		Somewhat Agree		Agree	
Item	N	%	N	%	N	%	N	%	N	%
Playing the game increased my awareness of challenging scenarios that occur in healthcare	1	3	0	0	2	6	8	24	23	68
Playing the game increased my awareness of the pressures that healthcare professionals can face at work	1	3	1	3	3	9	8	24	21	62
The game is engaging	1	3	1	3	1	3	11	32	20	59
I would recommend the game to others	0	0	1	4	0	0	8	32	16	64

The majority of public participants agreed that playing *Resilience Challenge* increased their awareness of challenging situations and pressures in healthcare. Public participants also indicated that the game was engaging, and they would recommend it to others. These results suggest that the game could be used as an awareness-raising tool with the public. The comments from the public reinforced the believability of the scenarios, as no comments challenged the accuracy of the game.

4.4.4. Findings: Qualitative findings

Framework analysis was used to analyse 153 free-text comments from participants. Each comment was assigned an alpha-numeric code to designate which free-text question the participant had answered. For example, the first response to Question A was marked as A1, as illustrated in Table 14.

Table 14: Survey questions and corresponding letter

Letter assigned	Participants	Question
A	Healthcare	Has playing the game caused you to reflect on your own practice? If so, in what ways?
B	Public	What was your overall impression of *Resilience Challenge*?
C	All participants	Do you have any other comments regarding the game?

The next section presents these data which aligned to the deductive themes generated from the CARE model (Figure 13). Afterwards, the themes that were generated inductively are presented.

4.4.5. Deductive themes

The first section presents deductive themes, drawn from the CARE model (Anderson et al., 2016a).

4.4.5.1 Demand

The first deductive theme in the framework was demand. Participants emphasised the role of daily pressures and challenges in their work. Participants reported that the examples of demand presented in the game reflected clinical realities. [The game] *highlights day to day issues that are frequently seen in practice (A39)* and *highlights the pressures we all face every day (A35).* These quotes demonstrate that participants could relate to the scenarios in the game. Participants affirmed that clinical staff face the brunt of the demands within the healthcare system. However, some participants thought that *Resilience Challenge* did not go far enough to capture the reality of their clinical environments. *This was not comparable to the stress and pressure that you can be put under in the clinical environment (A11).* It was notable that participants described demand and pressures, without naming specific examples.

Participants discussed the way that the expectations of senior managers can add to the pressures and demands of their roles.

> *I know I always put patients' safety first. What (the game) gave me was the knowledge that I can make the right decisions but that's not how the NHS works. You have to make the right decisions (based on) your senior management and what they have in their heads as priority (A29).*

This quote illustrates the conflict between organisational expectations of demand and personal priorities. Participants also recognised that management staff face their own demands, *It helped see the pressures other staff are under too (A7*), and reported that the different professional roles in the game raised their awareness of the universality of pressures in healthcare.

4.4.5.2 Capacity

Capacity refers to resources within a system that are available to meet demands. A participant identified the organisation as a whole as being the source of organisational capacity. *This is interesting because it's about more than expensive technology- it's about having more strategic approaches and an organization-wide culture of robust systems (C22).* This quote highlights the importance of capacity beyond equipment or physical space. Participants emphasised that adapting to pressures could mask chronic under-resourcing in the healthcare system. Conflicting views were reported on how this was presented in the game.

> *I worry that [Resilience Challenge] can be seen as passive acceptance of an unsafe situation rather than also talking about how front-line staff can engage in improving the capacity of the system (C52).*

Participants felt the pressure from a lack of resources, but might not feel empowered to express concerns about capacity in the system.

4.4.5.3 Adaptation

The third deductive theme was adaptation. Participants remarked on how the adaptations required in *Resilience Challenge* helped them to recognise the value of adaptation. *Made me reflect on fact that adapting my behaviour and not always giving a " textbook " answer and deviating from protocols may be the correct thing to do (A2).* This quote demonstrates a recognition that adaptation is required and can be done safely.

Participants discussed at length the nature of decision-making in adapting to pressures, including one free-text response of over 300 words. The participant described decision-making scenarios in other settings, such as

mental healthcare. Participants also identified the limits of adaptation, through decision-making.

> *Some decisions has to be done under pressure and playing the game showed me that sometimes taking a plan B is right but breaking policies is not. Thinking outside (or inside the problem box) can help patients. This is a concept that shows that flexibility is necessary in some scenarios [sic] (A5).*

This quote expressed the limits to acceptable adaptation, and that there is a window of acceptable work.

Participants clearly identified the difficulty associated with making decisions. Participants reflected on potential trajectories that their decisions could create, and how difficult it could be to reconcile these outcomes with their goals for care. The emotional aspects of decision-making were highlighted as being difficult, and a source of stress and anxiety. For example:

> *What the game also did was help me reflect on how frustrated I get with some of the scenarios as I could feel my anxiety increasing with each scenario. I can imagine all of those scenarios happening and how unsupported I feel when they do happen (A20).*

4.4.5.4 Outcomes

The fourth deductive theme was outcomes. Participants considered the potential outcomes of each scenario, and the consequences for patients. It was the outcomes of these scenarios where participants frequently disagreed; for example, in Scenario 5:

> *I disagree with one answer, when the man starts talking about going home and it is the drug round I would have spoken to the patient when they ask a question even (for) just a few minutes and it can make the patient feel valued and listened to. By making a promise to go back to him and something happens and you are unable to go back it can muddy the therapeutic relationship (C3).*

This demonstrates how much healthcare professionals prioritise engagement with patients. Others agreed: *Remember to put patient above your own needs*

(A38). The emphasis was placed on supporting patients and providing safe care, despite challenging circumstances. Ensuring positive patient outcomes was a priority, even if these outcomes came at the expense of staff.

4.4.5.5 Organisational resilience

Resilience Challenge aimed to communicate ideas about organisational resilience, a sub concept of resilient healthcare, to healthcare professionals. However, there was a lack of understanding about organisational resilience for most participants. The survey comments suggested that only a few participants connected the definition of organisational resilience to the scenarios in the game. It appeared that the definition of organisational resilience was not accessible for participants. This could have been related to the current trend of the word 'resilience' being synonymous with personal resilience and emotional coping. *I think it would be helpful to include something about how the individual feels/ reacts in these situations when under pressure and what options they would take to maintain their personal resilience (C12).* Some participants expressed confusion about the connection between the game and the concept of resilience. *This feels like a fairly simplistic approach and how does this transfer into an understanding of resilience? (A13).* While the game began with the definition of organisational resilience, participants did not appear to connect concepts in the scenarios with recognising the term.

4.4.6. Inductive themes

The following section presents themes that were developed inductively, in addition to the original deductive coding framework.

4.4.6.1 Reactions to the game

Overall, the process and design of *Resilience Challenge* was well received. The process refers to how the game moved from one scenario to another, and how users interacted with the game. Participants generally liked the design, use of sound, and the images in the game, although there was critical feedback as well (Table 5).

Table 5: Participant comments on the design of *Resilience Challenge*

Technology and Design	*It looks and feels great, is simple, realistic and very interactive. (C12)* *Well designed and smoothly functioning. Good software. (C35)* *Well-constructed learning resource - short and to the point. Well done!! (C32)*
Sound	*I like the background distracting sounds, gives an element of realism. (C50)* *I liked the noisy background - felt real. (C36)*
Images	*The graphics are really good. (C30)* *I didn't find the pictures helped - they weren't easy to interpret. A bit of animation or video would have been better. (C54)*

Overall, the game process and design were liked by participants, and supported the content of the game.

4.4.6.2 Reflecting on practice

Participants suggested the game helped them reflect on different aspects of their practice. For example, participants responded that playing *Resilience Challenge* highlighted interactions with colleagues. For example: *[the game] Made me reflect how my actions can affect other healthcare professionals (A27)*. The game prompted participants to reflect on their decision-making. *I realized I did not always make the best choice the first time, so I need to think more before reacting (A44).* Scenarios were useful to prompt participants to

evaluate their own work. Overall, healthcare professionals felt that the game encouraged them to reflect on their practice.

4.4.6.3 Safety

The game helped participants to reflect on the connection between their actions and safety. Participants indicated this link was made: *Playing the game confirmed that I have patient safety at the forefront of all my decision making at work (A20).* Another participant focused on skills depicted in the game.

> *It was actually very helpful. It made me realize that when I'm distracted while giving meds, yes, it's annoying to me, but also affects my patients negatively. I started thinking, what habits have I picked up in my practice that are causing me to practice unsafely (A37).*

This participant displayed sophisticated reflection in response to the game. These findings demonstrate the utility of *Resilience Challenge* to start discussions about safety, as healthcare professionals consider the safety implications of their decision-making.

4.4.6.4 The correct answer?

Some participants were adamant that there was a 'correct answer' to the scenarios and approached *Resilience Challenge* as a tool that evaluated whether they were making the 'correct' decisions. *I was relieved to note that most of the decisions I made in the video game were correct and I hope this is reflected in my practice (A28).* Other participants disagreed with the outcome of the scenarios, opining that a different choice should have been labelled 'correct'.

> *Also, in a real scenario, I would not have moved a medical patient to an orthopaedic ward without reassurance that they had medical doctors to cover them. And if that reassurance could not be provided, I would not be moving my patient, especially if they were showing signs of sepsis. I would be escalating that case to bed managers. Patient safety first (A32).*

Some participants suggested that the game could serve as a means for an organisation to test its employees about safety, or be used to screen future employees. *I think this would be a great tool for hospitals to assess their care givers culture of safety. Especially new caregivers or new hires (C33).* Others discussed decision-making in a nuanced way, reflecting the view that there is often no one correct answer to problems in healthcare.

> *Some of the choices given were challenging and my response was not considered to be the best response by the game authors. This allowed me to consider why the game's best choice was selected and whether this sat well with me (A25).*

These differences demonstrate varied perspectives on safety. There is a tension between a clear idea of right and wrong, and the perspective that patient care does not necessarily have a 'correct' answer.

4.5 Discussion

This phase of the thesis has demonstrated that it is feasible to design an authentic serious video game to operationalise concepts from resilient healthcare. Overall, participants found the game to be relevant, engaging, and would recommend it to others. Participants also agreed that the game sparked thinking about adaptation and safety, even if they did not always connect these reflections explicitly to organisational resilience. The following section discusses *Resilience Challenge* as a serious video game. The discussion of the CARE theoretical model is combined with the discussion of theory from Phase 3 of the thesis, in Chapter 7.

4.5.1. Designing the game

In this thesis, it was a priority to ensure the game design was realistic to enable participants' reflections. Participants reported that realistic elements, like a believable storyline and images, were effective in the game. Field et al.

(2018) found that a lack of realism in a serious game about air ambulances was a hindrance for participants. Great attention was paid to the details of *Resilience Challenge*, and participants reported that it was realistic and relevant to their work. Hart et al. (2017) described authenticity as a key factor for success in a safety critical game. This thesis reinforces the importance of attending to detail and producing accurate images so that games will be believable and credible for nurses.

4.5.2. Translating ideas

An objective of this thesis was to operationalise concepts from the CARE model and test these concepts with healthcare professionals. The survey responses indicated that some participants interpreted the game like an exam, a response that assumes outcomes can be easily identified and judged. The game tried to raise awareness of difficult challenges that require flexible adaptation, with the last slide of the game highlighting how the optimal choice varies, based on a clinical situation. This concept was not understood by all participants, or perhaps was not clearly enough communicated in the game. These findings illustrate how it may be difficult to accept that there is not always a clear solution to problems. It is important to acknowledge that adaptation is a reality of clinical practice, and to support and educate staff so that adaptation occurs safely.

There is increasing recognition of the educational value of serious games for healthcare professionals (Ricciardi and Paolis, 2014, Sipiyaruk et al., 2018). In this thesis, participants were not in agreement that they had learned about resilient healthcare. There could be limitations in the extent to which a video game can teach new concepts on its own. It is generally agreed that

serious games are more engaging than traditional teaching or e-learning modules (Dankbaar et al., 2017, Field et al., 2018, Sipiyaruk et al., 2018). However, evidence around learning outcomes has been mixed (Sipiyaruk et al., 2018). Dankbaar et al. (2017) found that students had higher scores on a patient safety test than controls, but were not statistically different from participants who used an e-learning module. This may indicate that serious games are effective at engaging healthcare professionals and eliciting reflections, but are not necessarily a superior teaching tool. Kow et al. (2016) found that a serious game improved medical students' scores regarding patient safety and surgery. However, serious games may be more cost effective than other educational methods (Field et al., 2018, Ricciardi and Paolis, 2014). The convenience of serious games suggests they could be used as an adjunct to traditional clinical education (Lomas, 2008). More research is needed to evaluate how serious games may support education, and establish what considerations could support serious games' educational value. *Resilience Challenge* may be most effective when used in conjunction with other materials, where complex ideas presented in the game could be discussed and clarified.

4.5.3. Eliciting reflections

An objective of this phase of this thesis was to assess the acceptability of concepts from the CARE model for healthcare professionals by eliciting reflections. Participants in the current study indicated that the game did help them to reflect on their work. This supports other studies which have shown that serious games can elicit reflection, which is deemed worthwhile by participants (Mekler et al., 2018), and have the potential to improve patient

safety (Aubin et al., 2012). However, Mekler et al. (2018) found that participants did not experience transformative reflection to enable them to translate ideas from videos games into their lives. Participants in the current study did experience a measure of critical reflection and some suggested their behaviour changed in their responses. Future research could examine if participants did indeed make changes in their behaviour because of serious games, and if so, whether these changes were sustained.

4.5.4. Limitations

There were several limitations of this phase of the thesis. The survey used to evaluate *Resilience Challenge* was a new tool, created for this study. It was not possible to evaluate the reliability of this tool because it was used for the first (and only) time. Efforts were made to assess face validity of the survey, and develop the survey drawing on literature and best practices in the area. Also, the sample for the survey was a convenience, purposive sample, which included non-nursing healthcare professionals and members of the public. These limitations indicate that the outcomes of the survey can be interpreted cautiously as an exploratory pilot study.

4.6 Conclusion and Phase 3

Phase 2 of this thesis demonstrated that a serious video game is a feasible way of operationalising concepts for healthcare professionals. The design of the game emphasised accuracy, and the complexity of everyday clinical work. The game also stimulated reflections on work by offering players sub-optimal choices. Serious games could support healthcare professionals to reflect on their work, and help them think about how to adapt

safely to pressures. *Resilience Challenge* offered a promising way to engage with healthcare professionals.

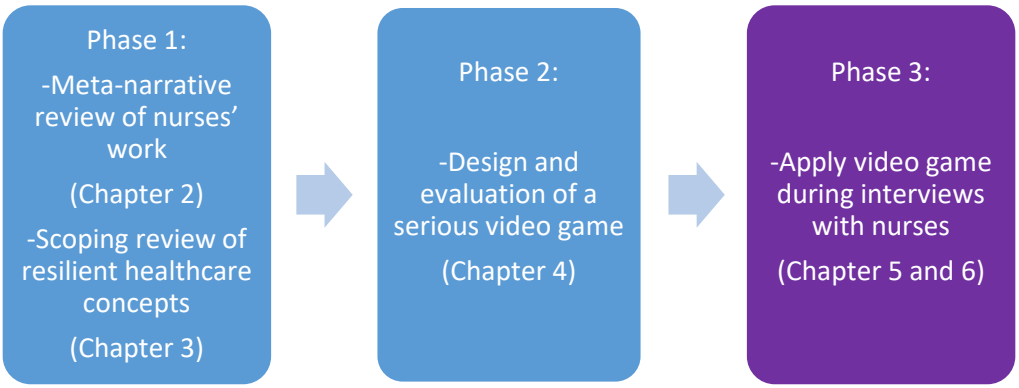
In light of this, *Resilience Challenge* was deemed acceptable to use as an elicitation tool in interviews with nurses about their work. The video game helped participants in Phase 2 reflect on their work, and was applied to Phase 3 to explore nursing work in more depth. Phase 3 is presented in the next two chapters.

5 Chapter 5: Interview Methods

This thesis aimed to develop a new model of nursing work, based on the insights of resilient healthcare theory, and extend resilient healthcare theory by assessing its applicability to nursing work. Previous chapters reported an assessment of how nursing work was previously understood (Chapter 2) and what concepts from resilient healthcare could help build an understanding of the complexity of nurses' work (Chapter 3). The development and evaluation of *Resilience Challenge* demonstrated how concepts from resilient healthcare could be operationalised, and that the game was successful in eliciting reflections from healthcare professionals. The next stage of this thesis was to bring these aspects together. Phase 3 is the phase of the thesis where nursing work was investigated, using resilient healthcare as a theory to help understand clinical work.

In Phase 3, *Resilience Challenge* was used as an elicitation tool during interviews to develop a new model of nursing work (Figure 15). This chapter reports the methods for these interviews, with the findings presented in the following chapter. The philosophical orientation, methodology, and methods for Phase 3 are described in this chapter. There are also discussions of technology use, ethical considerations, and rigour in this chapter.

Figure 15: Location of Chapter 5 in the thesis



5.1 Objective and Phase 3

The objective of this chapter, as part of Phase 3, was to use the serious video game as an elicitation tool during interviews with nurses in the UK to explore how nurses understand their work, drawing on the interpretive description methodology. This chapter also includes writing about my reflexive research experiences, to illustrate how my experiences, perceptions and concerns shaped the research process. The philosophical approach that informed this phase is outlined in the following sections.

5.2 Philosophical approach to research

This research was approached within a constructivist paradigm. Constructivism originated as naturalistic inquiry (Guba, 1981, Lincoln and Guba, 1985), and was later named constructivism to reflect the constructed nature of participants' realities (Guba and Lincoln, 1994). This contrasts with realism, where researchers assume there is an external, objective reality, which could be measured. The ontology and epistemology associated with constructivism is described in the following sections.

5.2.1. Ontology

Nursing work can be viewed through various ontological paradigms. Qualitative research generally falls on a spectrum of realist to constructivist, with realists supporting the existence of an external reality, and constructivists favouring the idea of reality being socially constructed (Mason, 2017). The purpose of constructivism is to understand experience through the eyes of the people who live it (Schwandt, 1994). What is true or known is variable, depending on who is asked and in what context (Schwandt, 1994). Constructivism was defined as a paradigm by Lincoln and Guba (1985) (see also: Guba, 1981, Guba and Lincoln, 1994). They identify truth as socially constructed, which can vary by context.

This study was aligned with the constructivist paradigm. The approach to data collection was based on a belief that nurses create their own meanings in their work, about its purpose and value. There is an educational standard, licensure requirement, and other objective markers of what constitutes nursing work. However, nurses also have personal understandings of their work, which are informed by their social and work contexts and experiences. Interpreting these experiences could then lead to a broader understanding of nurses' work.

5.2.2. Epistemology

Epistemology refers to what is considered knowledge about the phenomenon under investigation (Mason, 2017). Taking the approach that subjective understandings of nursing work are constructed by nurses from their experiences, it follows that this work can be understood through discourse with nurses. Constructing this understanding occurs during data collection

where “the “findings” are *literally created* as the investigation proceeds” (Guba and Lincoln, 1994, p. 111 [emphasis original]). These philosophical views informed the methodology in this phase of the thesis, which is discussed in the following section.

5.3 Methodology: Interpretive Description

The interpretive description (ID) methodology was used during Phase 3 of this thesis. Interpretive description was created as a bespoke nursing methodology that is designed to be flexible (Thorne, 2008, Thorne et al., 1997). Nursing research, like nursing work, requires flexible approaches to complex situations. Thorne et al. (1997) identified that nurse researchers were adapting traditional models of inquiry from the social sciences to understand work in complex clinical environments. Thorne (2008) identified this as an opportunity to create a new research framework for qualitative inquiry. Adaptation from other research traditions gave rise to the qualitative methodology of ID (Thorne, 2008, Thorne et al., 1997, Thorne et al., 2004). Berterö (2015) has criticised ID as being a repurposing of qualitative techniques. However, Thorne (2008) argues that the focus on flexibility and responsiveness in ID merited a new methodological distinction. In alignment with this study’s ontological and epistemological positioning, ID was chosen as the research methodology for this phase of the thesis.

Research in ID describes and interprets a phenomenon, considers the meaning of related behaviours, and formulates a valuable clinical response (Thorne, 2008). The product of an ID study is a new understanding of a complex phenomenon, with a focus on its practical implications. Design is

driven by the question and responsiveness to participants and unfolding narratives, rather than allegiance to a method (Thorne, 2008).

The method for data collection in Phase 3 of this thesis was interviews with nurses. Interviewing is a mainstay of data collection in qualitative research (Mason, 2017), including in interpretive description research (Hunt, 2009, Thorne, 2008). Interviews are also accessible and cost effective, and feasible within the practical constraints of a study (Thorne, 2008). The interviews in this thesis elicited nurses' understandings of their work, in order to develop a model of nursing work. The following sections discuss practical implementation of these principles, including the research setting, participants, sampling, and methods in detail.

5.4 Reflexive framework

Reflexivity is an important part of qualitative research, as a strategy to ensure that researchers consider how they influenced the research process (Sandelowski, 1986). However, reflexivity is also a nebulous process, which has as many definitions as there are commentators. There is a dearth of guidance as to how to enact reflexivity effectively in nursing research (Carolan, 2003). In this study, the approach used was drawn from Dean (2017), who suggested that rather than lay bare all possible factors that impact upon a researcher, it is helpful to identify the key issues that were perceived to be most influential. Dean (2017, p. 30) synthesises these ideas into a formula (while acknowledging the limitations and reductionist nature of such): (Personal biography and position X Research skills and resources) + Site or Field = Research Practice.

Reflections on my personal biography, research resources, and the site are included throughout this chapter.

5.5 Setting

The research setting was the NHS in the United Kingdom. The intention was to interview nurses from different practice settings from across the UK. The final sample included participants from Scotland and England. While the NHS in England and Scotland are not identical, other researchers have also recruited participants from NHS England and Scotland together (Oates, 2015). Therefore, the differences in systems were not deemed substantial enough to distinguish between participants during data analysis, based on location.

I am Canadian and a Registered Nurse, and have not worked in the NHS. However, I perceive that this had limited impact on the outcomes of this study. The Canadian healthcare system was modelled after the NHS, and espouses the values of healthcare as a human right and universal, free access. The Canadian healthcare system is free at the point of care, and private healthcare is expressly banned in Canada. I worked in several different nursing capacities in Canada, and am familiar with the mechanics of both systems. I have been a patient in NHS since my arrival in the UK, and have spoken at length to many people who work in the NHS, including my research participants. There are many similarities between the two systems, which was evident throughout the research.

5.6 Participants and sampling

This phase of the thesis used convenience, purposive sampling (Green and Thorogood, 2018, Richards and Morse, 2012). Snowball sampling was also created through participants who referred others to the study. Qualified

nurses and nursing students were invited to participate via Twitter. Convenience sampling allows researchers to attract those who are easily available to participate (Richards and Morse, 2012, Thorne, 2008). It was assumed that nurses who had Twitter accounts would be reasonably comfortable with technology use, and could complete a Skype interview if they were outside Greater London.

Purposive sampling refers to accessing participants who have experiences that can support the understanding of a phenomena (Green and Thorogood, 2018, Thorne, 2008). As the scope of this study was broad, any participants with UK nursing experience would have had insight into the phenomena in question. There were also several key informants, or participants who could provide particular insights for the study (Thorne, 2008). These included nurse administrators and educators, who had previously expressed an interest in the study. Purposive and convenience sampling ensured that the study participants had lived experience of nursing work, and were practically available.

Snowball sampling occurred when some nurses shared posts online, encouraging others to participate in the study. It is known that Twitter can lead to snowball sampling when users Retweet [share on their pages] requests for research participants (O'Connor et al., 2014). Participants reported that nurses posted the link for the study on workplace Facebook groups, and sent the link to colleagues via email. This sharing may have occurred in other ways, unbeknownst to the researcher.

5.6.1. Recruitment

Participant recruitment occurred online using Twitter, and through word of mouth. Twitter is an online social media platform which has many potential benefits for nurses (Archibald and Clark, 2014). Recruiting participants using online programmes can broaden the potential pool of participants by uncoupling recruitment from organisations or gatekeepers (Janghorban et al., 2014). Twitter is considered an acceptable and feasible way of recruiting research participants for health studies in contemporary research (O'Connor et al., 2014). Using Twitter as a recruitment tool enables researchers to contact many potential participants directly, rather than through an intermediary, like an organisation.

Tweets were sent from my professional Twitter account, inviting nurses to learn more about the study. Tweets gave participants a link to a website with detailed information about the study, and an invitation to contact the researcher to participate. The advantages of using Twitter became obvious when much of the participant recruitment was completed within 48 hours of sharing the first Tweets. This approach was faster than other studies with new Twitter accounts where hundreds of Tweets were needed to recruit participants (O'Connor et al., 2014), or where researchers take an average of five months for recruitment (Lane et al., 2015).

5.6.2. Inclusion and exclusion criteria

The inclusion criteria for this study were that participants needed to be Registered Nurses or nursing students currently working or studying in the UK, in any setting. Participants needed to complete an interview in English,

and be available to meet in person or via Skype. There were no restrictions to study participation based on length of time as a nurse.

The participants in this study worked in a variety of clinical practice settings, including hospitals, educator roles, and community services. Participants were purposively sampled from a range of work settings to contrast nurses' experiences across the breadth of the healthcare system. Participants also included nursing students from both mental health and adult nursing programmes. Participants were educated in each educational branch of nursing in the UK (adult, child, mental health, and learning disabilities), as well as management and education.

A total of 43 individuals expressed an interest in participating in this study. Following the application of the inclusion/exclusion criteria, and booking of interview appointments, a final sample of 20 nurses participated in the study.

5.7 Methods

The following section discusses the semi-structured interviews used to collect data in Phase 3 of this thesis. Interviews consisted of a combination of a topic guide, the *Resilience Challenge* video game, and open questions and probes to elicit participants' views.

The interviews for this thesis were conducted both in-person and through Skype, with a total of 20 interviews. Other qualitative studies have also used both in-person and online interviewing methods to support feasibility and widen the pool of potential participants (Oates, 2015). Interviews took place following the informed consent of participants (discussed later in this chapter), and were audio recorded and transcribed verbatim. The interviews ranged

from 45 minutes to 2.5 hours. The interviews are discussed in more detail below.

5.7.1. Interview Setting

Interviews were conducted with consenting participants in person, by Skype, and in one instance, by phone. Participants in the Greater London area were interviewed in person. These interviews took place at a location of mutual convenience, such as in offices at the University, coffee shops or other public locations, at the participants' choosing. The content and methods of the interviews are discussed further in the following sections.

5.7.2. Interview process

The approach to interviews was the same for both Skype and in-person interviews. The interview protocol was as follows:

- Consent process
- Demographic questions
- Opening question, What is your current role, and how did you reach this role? For students, this was modified to, What interested you in x type of nursing?
- Have you heard of a theory/practice gap? [as a shorthand for introducing work-as-imagined and work-as-done] Are there differences between how you plan your work and what actually happens?
- Play *Resilience Challenge* and have a short conversation after each scenario, asking, Does this happen in your setting?
- What do you think of the issues raised in the game? How does it feel to deal with these types of scenarios?

During the interviews, a variety of techniques were used. Initially, the plan was to use the 'think aloud' method (Fonteyn et al., 1993, Lundgren-Laine and Salantera, 2010), which is a technique where participants are asked to narrate their thoughts while they complete a task. This did not work, as participants read the video game text off the screen. In response, the technique changed to having a mini debrief after each scenario in the video game, and asking about the participants' experiences. This technique was much more effective and the think aloud method was not attempted further.

In addition, participants were asked for specific examples during interviews, as suggested by Mason (2017) and Thorne (2008). This was a fruitful technique, as participants illustrated how nursing work occurs in their settings. Interviews were concluded by asking participants, Is there anything else you would like to tell me? Often, participants responded with comments about emotional resilience. This may reflect one of the issues identified in Phase 2 of this thesis, that people connected resilience with emotional resilience rather than organisational resilience, even though they had been given a definition of organisational resilience at the start of the game. Each interview was audio recorded and transcribed verbatim by a professional transcriber.

5.7.2.1 In-person interviews

Eleven of the 20 interviews were conducted in person. Participants completed the consent form, before beginning the questions from the topic guide. Participants were observed while they played the video game on a designated iPad. This provided the opportunity to see which options the participants were choosing when they played the game. The options were

verbalised (“I see you chose the option to send the patient to the orthopaedic ward”) so that this information would be retained in the transcript of the interviews.

5.7.2.2 Skype interviews

Nine of the 20 interviews were conducted via Skype. Skype is a free digital tool that allows online conversations with both video and audio connections, enabling synchronous conversations between two parties. Using Skype increases the convenience and flexibility of interviewing, broadening opportunities to participate in research (Janghorban et al., 2014, Oates, 2015, Sullivan, 2012). Skype interviews overcome practical barriers and decrease research costs (Iacono et al., 2016, Oates, 2015). The burden on participants can also be lessened via Skype interviewing, as they are not required to travel or otherwise disrupt their routines (Iacono et al., 2016). Other researchers have used both Skype and in-person interviews in the same study, and have not identified negative impacts on data collection or analysis (Oates, 2015).

The Skype interviews proceeded similarly to those in-person. Participants played the video game and responded to subsequent questions about it. *Resilience Challenge* was available online for free as a stand-alone website. Participants played the game during the Skype call, having both Skype and *Resilience Challenge* active at the same time. Participants were asked to report their progress as they moved through the game, to associate their responses with a given scenario. For example, they made comments such as, ‘Ok, now I the patient is back from the X-ray’ to indicate what scenario they were seeing. The interview methods meant that the Skype interviews were procedurally the same as the in-person interviews. There were no

perceived differences between the in-person and Skype interviews. As video calling is popular in the UK, it is likely participants had prior experience using the technology, limiting the impact of this technology.

5.7.2.3 Reflexivity in data collection

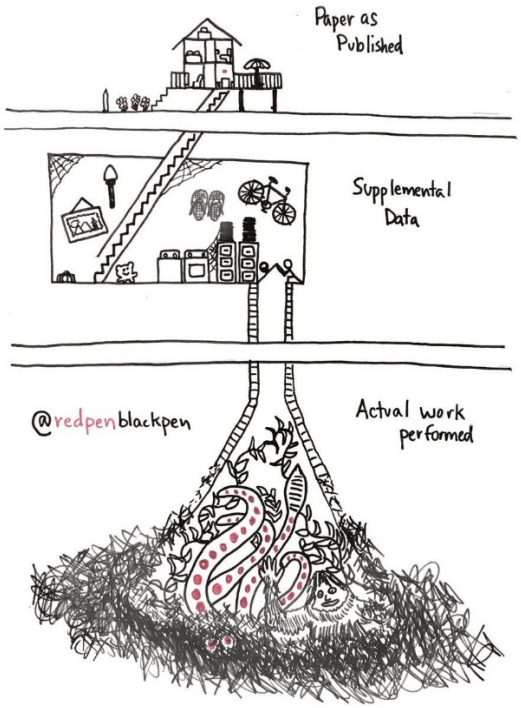
Being a disabled PhD student impacted how I proceeded with data collection. Being disabled creates hard limits that cannot be overcome. It mediates how you interact with the physical and social world, in profound and limiting ways. My disability status influenced the research question in this study. The original question for the research was, How do nurses adapt their work to pressures? This changed for several reasons. Initially, this was intended to be an ethnographic study. Due to personal illness, this approach was not possible, and had to be abandoned. I was too immunocompromised to conduct observations in a clinical setting, and waiting until I had recovered would potentially delay the study further than was manageable.

Nearly every decision in the study had to take my status as a disabled student into account. For example, I was aware that the preferred approach to data collection and analysis is concurrent data collection and analysis. This approach is valuable, and time and resource consuming. I returned from a medical leave, and obtained ethical approval for my research. I am not able to transcribe my own interviews, as typing is painful. I also knew that I would need to change my medication about a month after I returned, and I anticipated (accurately) that this would make me feel very ill. So, I knew that I had a window of about a month, I could not transcribe my own interviews, and there were time and financial pressures to complete my research. I decided to conduct the interviews as quickly as possible, and completed almost all of

them within this one-month period. I changed my medication and spent several weeks incapacitated, while my transcriber typed the interviews. Afterwards, I was able to return to the research process and complete the analysis.

To try and mitigate some of the influence of this practice, I reflected on the interviews, asked myself, What is this participant telling me? What do I need to know next? I found that over time, I narrowed the focus of the interviews, and the study. I adopted the topic guide and explored key issues that I felt to be important. This was an imperfect compromise, but it was a sincere attempt to manage within a limited context. These negotiations occurred throughout the project, and impacted the study in ways I did not like. This is the reality of being a disabled student, and a degree of acceptance was required. The image in Figure 16 captures this feeling well.

Figure 16: The reality of research projects, from @redpenblackpen



5.8 Data analysis

Data analysis was characterised by coding transcripts to interpret participants' experiences. Inductive coding was the hallmark of the coding process, consistent with ID (Thorne, 2008). Additionally, theoretical concepts from the CARE model acted as sensitising concepts (Blumer, 1954) during analysis. This reflected learning from Phase 2, where healthcare professionals identified with concepts like adaptation in their work. Using theoretical concepts in data analysis enables a researcher to account for known phenomena that have been explored elsewhere (Hernandez, 2009, Thorne, 2008). The analysis process is described in the following sections.

5.8.1. Open coding

The first part of the coding process was open coding. This process identified broad concepts expressed by the participants. It is considered best to avoid micro-level coding in interpretive description, as this can overwhelm a researcher and limit the ability to make connections between cases and identify broad issues (Thorne, 2008). Instead, it is favourable to ask broad questions, and remain oriented towards the whole phenomenon (Thorne et al., 1997). It is also important to consider how the participants' worldviews impact upon the construction of their experiences (Lincoln and Guba, 1985).

Five interviews were coded at a level of phrases or sentences, and occasionally an entire anecdote (see Appendix J for an example). These codes were generally descriptive, and served to index these data, using NVivo software v12 for data management. Concurrently, there was a journal, which was used to track the coding process and emerging ideas (Appendix K). There was also a parallel document listing the research question and aims, and it was

populated with ‘working ideas’ about the bigger picture of what participants were saying (Appendix L).

After coding five interviews, there were 200 inductive codes generated. These codes were reviewed and merged into other codes. For example, “nurse feedback” was moved to “changing practice” because participants had explained that giving feedback was intended to change practice. Several codes that were repetitions were deleted. Next, codes were written on stick notes, and laid out, as a tactile way of exploring different groupings. The codes were grouped and rearranged, developing a preliminary framework (Appendix M). This framework was refined numerous times with further coding of the interviews and reflection.

5.8.2. Axial coding

For the next iteration of analysis, the focus shifted from identifying concepts to understanding relationships between concepts (Thorne, 2008). This process focused on identifying, What is happening here? (Thorne, 2008). Codes were reimagined in various ways to explain different participants’ reports of their work. During this stage of coding, concepts from the CARE model were used in parallel with inductive codes. In contrast, coding using domains of nursing labour (physical, emotional, cognitive, and organisational) was not useful. This was because the experiences shared by participants did not fit discretely into a single type of labour. For example, one reflection from a participant could discuss both emotional and organisational labour. Examples of each type of labour were present in these data, but not in isolation. Rather, participants emphasised their roles, and how they did

whatever was required to fulfil that role. The focus turned to the role-based path of inquiry, in response to these data.

The process of coding, refining, and reflection continued for several cycles. The CARE model and a new model (see Chapter 6) were refined through re-reading and selective coding of transcripts. Selective coding is focused, and refers to looking for specific examples in these data to support or refute the identified patterns (Thorne, 2008). Each interview was reviewed for any selective coding that could be added. After this process, it was determined that the models were refined enough to begin writing. The writing process also enabled further reflection and adjustment of concepts to enhance clarity.

5.9 Ethical considerations

There were many ethical considerations for both the participants and the researcher in this thesis. Approval was granted for this research by the King's College London Research Ethics Committee, protocol number RESCM-17/18-3787 on April 2, 2018 (Appendix H).

5.9.1. Protection of participants

Protecting the research participants was a key consideration in this research. The participants were not vulnerable, and the interviews were low risk. Participants were asked about their work, which was assumed to be a topic of relative comfort. No participants appeared distressed during the interview, and all were provided with the contact information of a confidential third-party service, in case they wanted support.

5.9.1.1 Consent

Informed consent was obtained from all participants. Participants were given the information sheet and consent form via email 3-4 days prior to their

interview. When interviews were conducted in person, participants received hard copies of both the information sheet and consent form. They were asked to review these and, if willing, sign the consent form before the interview. For the Skype interviews, participants were emailed a reminder several days in advance, asking them to review the consent form and information sheet. The Skype interviews began with reading off each point of the consent form, and inviting the participants to respond with, I consent, or I do not consent. There were no instances of participants refusing consent or withdrawing from the study after completing the consent process. Each participant consented to all elements of the study.

5.9.1.2 Data protection

Data protection was a central aspect of managing participant information. All interviews were recorded using a dedicated mobile phone that was password protected. The mobile phone contained only the apps to record and upload audio files and was not used for any other purpose. Participants were aware that the interviews were being recorded. Mobile phones are ubiquitous, which perhaps limited the 'strangeness' of speaking next to one as a participant.

All digital files were stored securely on the University's network, as password protected and encrypted files. All hard copies of consent forms were kept in a locked cabinet. At the conclusion of the interviews, none of the participants had withdrawn from the study. Hard copy consent forms were then scanned and saved with the study data and were destroyed at the conclusion of the study (with digital copies retained).

To maintain participant confidentiality, each participant was assigned an alpha-numeric code, based on the order in which they were recruited into the study. The code identified the participant number; for example, P5 indicates Participant 5. A master key was digitally kept separately from other study documents and was the only location where participants' names were associated with their identifying codes. All other study materials used these codes exclusively. These efforts ensured that participant identity remained confidential.

5.9.2. Safety of the researcher

Safety is an important consideration for researchers (Green and Thorogood, 2018). All of the in-person interviews were either conducted at the University, or in a public place, like a coffee shop. Hosting interviews at the University may have emphasised the power imbalance between researcher and participant, but it also provided a measure of safety for the researcher.

It is challenging to conduct interviews when the emotional intensity is high (Thorne, 2008). This was especially true with participants who told stories of vulnerable patients or graphic incidents they had experienced (such as a patient committing suicide during a home visit). Green and Thorogood (2018) indicate that data collection can be emotionally difficult, and that researchers need to have opportunities to debrief. I was mindful of the need to debrief and the need to protect participant confidentiality. I spoke with a colleague in general terms following difficult interviews for debriefing and support.

5.9.3. Ethical challenges during the study

There were several ethical issues raised during this study, one of which is discussed here as an example of ethical practice in research. Twitter was a highly effective tool to recruit participants. However, there were unexpected ethical challenges following recruitment. One example was a participant who Tweeted that they had participated in an interview. The Tweet was similar to 'great to speak to @JJackson_RN and participate in valuable nursing research!". Upon seeing this Tweet, the participant was contacted to say that they had a right to share the Tweet, but that it could disclose their participation in the study. While it was unlikely that anyone would connect their Tweet to any content of the study, it was a risk. The participant chose to delete the Tweet. Ethical considerations were all part of ensuring this study produced ethically sound findings. Considerations about rigour are discussed in the following section.

5.10 Rigour

There are numerous views on how to ensure rigour in qualitative research. This section reviews some of the central arguments around rigour in qualitative research and outlines the approach to rigour used in this thesis. The emphasis was placed on supporting rigour during methods, rather than appraisal of research after it is conducted (Morse et al., 2002).

5.10.1. Rigour frameworks

There are competing views about how to ensure rigour in qualitative research. Lincoln and Guba (1985) produced seminal writing on rigour in qualitative research. This was when the dichotomy between quantitative and qualitative methods was sharply pronounced. Guba (1981) thought that

quantitative standards of rigour, namely validity (the ability to measure the phenomenon of interest accurately) and reliability (the ability to produce the same results on repeated measures), were insufficient to assess quality in qualitative research. Lincoln and Guba (1985) contrasted validity and reliability with establishing trustworthiness in qualitative research (see also: Guba, 1981).

In contrast, Sandelowski (1993) reflected that rigour was less about following specific guidelines, and more about an appropriate spirit of inquiry. This was a departure from her earlier work (Sandelowski, 1986), and she acknowledged that following a checklist of methods did not necessarily produce good research. Additionally, Morse et al. (2002) distinguish strategies to enhance rigour during the research process from those to evaluate a project. Morse et al. (2002) identify the most critical threat to rigour as a lack of researcher responsiveness, such as a commitment to a model that does not reflect emerging findings.

More recently, Morse (2015) continues to espouse validity and reliability as central constructs in qualitative research. Other authors reject this terminology, favouring specific qualitative research terms for rigour (Carnevale, 2016). While authors dispute the appropriate terminology to use for establishing rigour in qualitative research, they advocate many of the same strategies for producing good qualitative research. These strategies, and how they are applied in this thesis, are outlined in the following section.

5.10.2. Rigour enhancing strategies

Thorne (2008) outlined a bespoke approach to rigour for interpretive description research. Thorne (2008) quality principles for interpretive

description are presented in Table 15, with expanded sections demonstrating how specific techniques for rigour were used in this study. This table associates these criteria with appropriate techniques from Thorne, and strategies from other authors as well. This approach created a rigour strategy that is specific to the method used in this thesis and draws on seminal authors from qualitative research rigour.

Table 15: Rigour criteria and techniques

Quality Principle	Definition	Relevant techniques	Use in this thesis
Epistemological integrity	"A defensible line of reasoning uniting all aspects of the study, from the nature of knowledge… to the [research] methods" (Thorne, 2008, p. 233)	Methodological congruence, where the method matches the question (Mason, 2017, Morse et al., 2002) External auditing and peer review (Guba, 1981, Morse, 2015)	-Extensive training in qualitative research -Supervisor guidance and feedback -Exploration of different qualitative methods, before selecting ID -Publication and presentation of the study, with a measure of external peer review
Representative credibility	Theoretical claims are consistent with the population sampled *(conclusions are not 'bigger' than they are)* (Thorne, 2008)	Appropriate sampling (Morse, 2015, Morse et al., 2002) Thick description (Guba, 1981, Lincoln and Guba, 1985, Morse, 2015)	-Sample included nurses from a variety of settings, roles, and levels of experience -Use of participant quotes extensively in Chapter 6 to support findings -Illustrate concepts with multiple participant quotes to support conclusions
Analytic logic	Make the reasoning behind the decision-making in the study explicit (Thorne, 2008)	Audit trail (Carnevale, 2016, Lincoln and Guba, 1985, Morse and Field, 1995, Sandelowski, 1986)	-Audit trail recorded in journal (Appendices K, L, M), through data collection and analysis to support reflection -Detailed methods described in Section 5.7
Interpretive authority	Researcher's interpretations are trustworthy, and confidence that the study refers to a measure of truth (Thorne, 2008)	Reflective journal (Guba, 1981, Lincoln and Guba, 1985, Thorne et al., 1997) Verify interview transcription (Morse and Field, 1995, Poland, 1995) Data management software (Morse and Field, 1995)	-Reflexive process of data collection and analysis, including a research journal (Appendices K, L, M, and Section 5.7.2.3) -Transcripts professionally transcribed, and verified by the researcher -Discussed data analysis and interpretation frequently with supervisors for input -NVivo data management software used to facilitate coding (Appendices J, M).

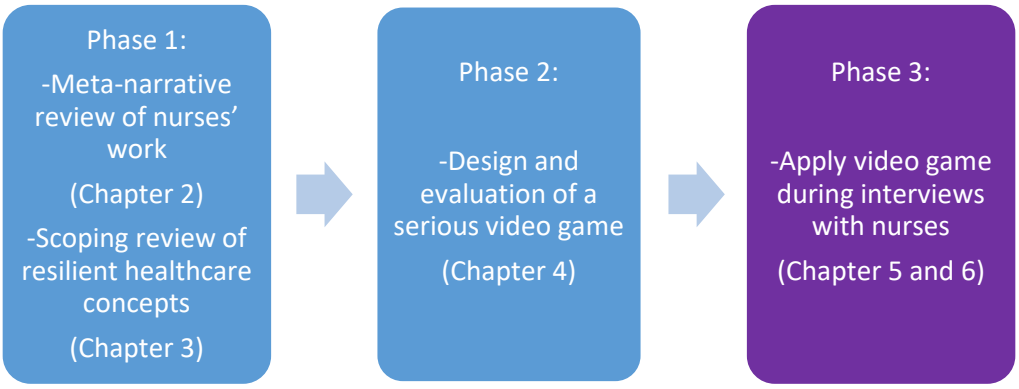
5.11 Conclusion

This chapter explicated the research orientation and methods used in Phase 3 of this thesis. The philosophical approach to this research was constructivist. Interpretive description provided a methodological approach for this phase. This method used a tested elicitation tool to explore nurses' understandings of their work. Considerations for ethical and rigorous research were applied throughout the research process. Nurses explained their work in several ways, which is presented in the following chapter.

6 Chapter 6: Interview Findings

This chapter presents the findings of Phase 3 of this thesis, where 20 nurses participated in semi-structured interviews, using the *Resilience Challenge* game as an elicitation tool. The objective of this chapter was to analyse interview findings inductively and, using resilient healthcare concepts, to provide an integrated model of how nurses view and understand their work. The role of Chapter 6 in the overall thesis is illustrated in Figure 17.

Figure 17: The location of Chapter 6 in this thesis



While nursing researchers have presented nursing work as different domains of labour, the nurses interviewed understand their work by its role in healthcare. Participants reported that their work is complex, and is adapted constantly. This chapter begins with an interpretive description of participants' understandings of their work, followed by exploring how work is adapted, using the CARE model. The chapter concludes with participants' impressions of outcomes and implications for nurses themselves. In this chapter, each quote is labelled with the participant's identifying code, and a brief description of their roles for context.

6.1 Demographic profile of participants

The demographic data for Phase 3 participants are listed in Table 16.

Table 16: Participant demographic information

Characteristic	No of Participants	%
Age		
20-29 years	5	25
30-39 years	8	40
40-49 years	6	30
50-59 years	1	5
Gender		
Female	17	85
Male	3	15
Level of Education		
Student	4	20
Bachelor	5	25
Masters	8	40
PhD	3	15
Employment Status		
Full time	18	90
Part time	2	10
Ethnicity		
British	15	75
European	4	20
Caribbean	1	5
Race		
White	19	95
Black	1	5
Total Years Work Experience		
Less than 5	4	20
5-9	4	20
10-14	4	20
15-19	4	20
20+	4	20
Years in Current Role		
Less than 5	15	75
5-9	3	15
10-14	2	10
Nursing setting		
Adult	16	80
Mental health	2	10
Child	1	5
Learning disability	1	5

The sample was evenly distributed across years of experience. The age range reflects an expected range for the nursing profession. There is an over-representation of nurses with higher degrees, adult nurses, and white nurses. This may be due to the convenience nature of the sample, or the recruitment method of using Twitter to invite participants to the study.

These participants have changed roles in their careers, as there is an even distribution of total years of experience across the participants, but the majority (75%) of nurses have been in their current role for less than 5 years. All post-qualification participants reported that they had had multiple job titles, and worked in varied settings and specialties. Several of the nurses worked concurrently in a clinical role and research role, or similar. Other nurses have gone back and forth between clinical work, managerial work, and so forth. Their fluid movement between roles demonstrates a willingness to engage in different aspects of work.

All but one of the 20 participants in this study were white. This sample does not accurately reflect the profile of the NHS, which has approximately 50% Black and Minority Ethnicity (BME) employees. Whether BME nurses are less likely to use Twitter, or saw the Tweets and did not wish to participate is unknown. This may be an example of "elite bias, a particular problem in qualitative research, because subjects who act as participants or informants in studies are frequently the most articulate, accessible, or high-status members of their groups" (Sandelowski, 1986, p. 6). This outcome contrasts with other studies, where online channels like Twitter were considered effective means of recruiting so-called hard to reach participants (Lane et al., 2015, O'Connor et al., 2014). Images from *Resilience Challenge* were used on the recruitment

website and were selected purposefully to represent diverse nurses. It is unknown why the sample did not include more racial diversity.

The following section presents an interpretive description of nurses' understandings of their work, the complexity inherent in this work, and how nurses categorise their work by its role in the healthcare system.

6.2 Complexity

Nursing work is characterised by complexity. In every setting, nurses described their work as challenging, detailed, and unpredictable. Complexity was a common feature of work for qualified nurses, and was described in different ways in each role. The complex nature of work was consistent whether a nurse worked directly with patients or not. Thus, the patients are not the only source of complexity; the healthcare system itself is a place of complex work.

Participants associated complexity with actors in their setting, such as patients, physicians, students, and colleagues. It was recognised that complexity arose from the infinite variability in people, creating infinite variability in work. Nurses in community services highlighted how being outside a controlled environment such as a hospital increased unpredictability in their work. The following participant explained how the distance from formal care settings increased the autonomy and breadth of the nurses' clinical work. *And some of our patients may well be on a remote island so you couldn't get a GP there (P3. Adult nursing, nurse educator).* A lack of access to traditional supports meant that nurses were creative and resourceful to meet patients' needs. The purpose of nursing roles was to respond to and manage complexity.

Participants also illustrated how nurses formulate individual responses to complexity and individual nurses varied in their responses. They expressed varying opinions on how nurses may work, and what responses to complexity were appropriate. This student nurse participant reported a perspective on how nurses manage complexity. *Effective nursing is super sophisticated because you have to take in, you have to really know the patient, you have to consider all these different things (P6. Mental health nursing, student).* Each person is different, thus the clinical work with each patient is different. Personal needs increase the complexity of nursing work, as nurses have to be responsive to this variety through their actions. Participants also indicated that they did their best to address patients' varied needs, while acknowledging that the outcomes were beyond their control.

Participants respond to complexity by taking actions that had more than one purpose. Such blended activities were an integral part of how nurses work. This participant described routine moments during clinical work, where many things are happening:

> *For instance, if you were bed bathing a patient, you're not just actually washing that patient and looking at the skin, you're obviously using that opportunity to have some conversation with them, depending on how they are, so that you're actually building it into the everyday tasks that you're doing (P3. Adult nursing, nurse educator).*

This participant demonstrates how clinical work may appear task based to a casual observer, but the intention behind nurses' actions is manifold. An approach such as this also achieves several nursing objectives without overwhelming a patient. In this way, nurses are completing patients' daily activities and accomplishing other aims simultaneously.

The way participants understood complexity reflected a developmental arc, with experienced nurses speaking about complexity more than junior nurses. Participants with more career experience were quick to report their activities as being complex, and serving more than one purpose. In contrast, the adult nursing students were developing this capability, and saw their work as more of a sequence of tasks rather than an integration of activities. *If the patients are in pain and you've got a question, you've got to prioritise which is the more important, meeting the patient's needs in regards to the pain or answering their question? (P20. Adult nursing, student).* This participant was developing an understanding of clinical work, and was not yet integrating multiple activities. However, this participant did appreciate that patients' needs required prioritising, demonstrating a developing understanding of complexity in nurses' work. Adult nursing student participants contrasted with mental health nursing students in this study, as mental health students appreciated that their actions could serve dual purposes.

Complexity pervades nursing work, and each role manages its own complex challenges. These roles are illustrated in depth in the following section.

6.3 How nurses understand their work

While nursing authors have studied nursing work as different types of labour (Chapter 2), nurses in this study understood their work by its role in the healthcare system. This means that nurses identified their roles by their broad goals and purposes, rather than the specific nature of their activities. Nurses engaged with complexity effectively because they used their roles as a flexible frame that allowed adaptation of work. Nurses indicated that they are required

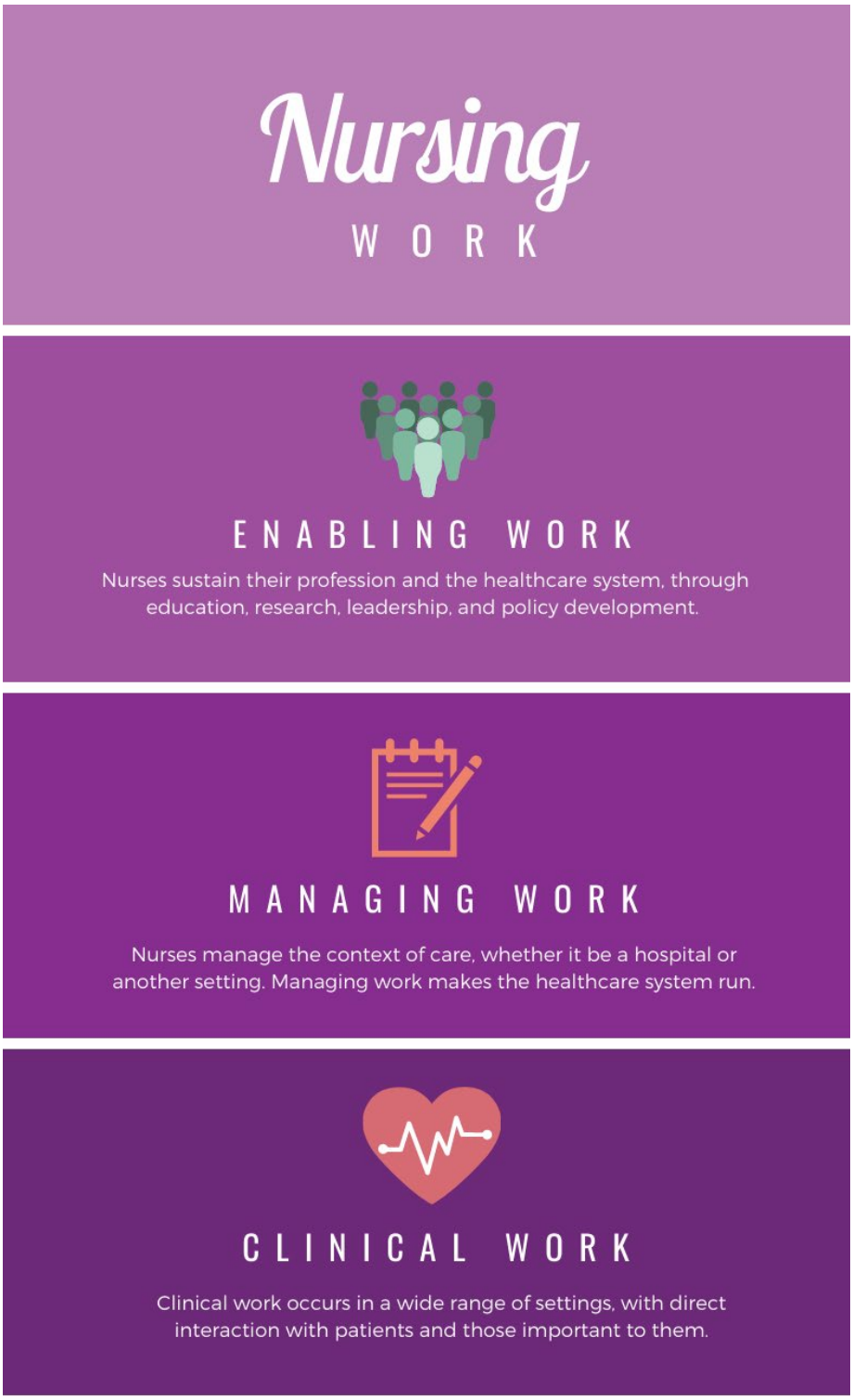
to adapt constantly, and understanding their work as a part of a role (rather than a series of tasks) enabled them to adapt.

These findings indicate that nurses understand their work as being part of one of three broad categories: clinical work, managing work, and enabling work. The context for each type of nursing work is an environment where they are required to adapt constantly. Nurses reported they are at the centre of multiple actors, and do work in service of both patients *and* the healthcare system.

The understanding of nurses' work as roles is crucial to managing complexity and enabling adaptation. Participants indicated that the concept of roles created the framing needed to facilitate adaptation, in response to their dynamic work. The frame of a role highlighted the general goals and remit of participants' work, and they would do whatever tasks were required to achieve these goals. In contrast, if nursing work was defined by tasks, there would not be the inherent flexibility in the role that is needed to manage complexity. A task-focused approach would curtail nurses' work. When nurses use their role as their frame of reference, it provides nurses with the flexibility to do whatever is required for their work.

The role framing is discussed in detail in this section. Nurses reported their work as broadly having three roles: clinical work, managing work, and enabling work (Figure 18). These categories were developed iteratively from participant interviews. This section explains each of these categories in detail.

Figure 18: Roles in nursing work



6.3.1. Clinical work

The first role nurses reported was clinical work, the most visible and well-known facet of nursing. Clinical work can occur in a range of settings,

and with a wide variety of patient populations. Clinical work is mostly patient facing, with direct interaction with patients and those important to them. Clinical work can involve a variety of skills, and is not restricted to biomedical interventions. This participant illustrated how clinical work includes several overlapping activities.

> *You're going round and you're seeing your patients and you might be giving them medication, but you're not just giving them the medication, you're actually having that conversation with them and finding out how they are and where they're at with the treatments or whatever else, as well as having that visual assessment of how they're doing (P3. Adult nursing, nurse educator).*

There were no prescribed tasks that constituted clinical work, and it could vary widely by setting. This participant illustrates how an action becomes therapeutic, based on its purpose for a patient. *Really basic stuff like eating the same food off the same trolley can become really therapeutically significant if you're working with someone who is paranoid (P6. Mental health nursing, student).* This participant explained how nurses could build trust and develop therapeutic relationships through seemingly minor activities like eating a meal. The role of clinical work is to work directly with patients to provide support and facilitate their journeys through the healthcare system, with the varied activities that requires.

Nurses order their clinical work based on their priorities, which are largely unspoken. Hierarchies of clinical work priorities varied slightly by setting but had common themes. Nurses stated that the first priority of their work was legal responsibilities, as in what must be done to keep their licenses. For nurses facing considerable pressures, prioritising their capacity was a difficult trade-off.

> *The problem is, in intensive care, you have to do the clinical things. It's non-negotiable. If I don't do the physical things, that's what I'm up in court for. If I don't give a mum a hug and spend 10 minutes with her, I'm not up in court for that. She won't be happy with me, but my rationale is that I'm saving her baby, so I think that the things that get cut are the emotional side (P12. Children's nursing, clinical nurse).*

This participant recognised that a family member's priorities may not align with a nurse's priorities, but that nurses were accountable to standards beyond the bedside. Giving medication was a universal priority for nurses in clinical work roles. Most other things could be delegated or managed, but medication administration was paramount. This was due to the necessity of medication for patients, and the ramifications of medication being missed.

Clinical work included actions that are not directly patient-facing, including documentation, organising resources, and discharge planning. Participants reported mixed opinions of this work. Nurses generally devalued 'paperwork', seeing it as taking them away from their 'real work' with patients. However, other participants highlighted the importance of documentation for patients. *I still think a lot of nurses struggle with seeing that documentation is equally as important as all of the other aspects of the care (P3. Adult nursing, nurse educator).* This participant verbalised how documentation is both protective of nurses and important for patients' continuity of care, even though this could be overlooked by colleagues. Nurses' perspectives varied on the value of documentation, but it remained a key part of the hierarchy of clinical work. This finding reflects how some nurses prioritise patient-facing work as being more valuable than activities away from patients. Nurses understand the role of clinical work as supporting patients, and de-value parts of their work they see as outside this role.

6.3.2. Managing work

The second type of work that nurses engaged in is managing work, where nurses look after the context of clinical work and manage care settings. Nurses' managing work makes clinical work possible, for nurses and for other healthcare professionals. Managing work is most visible in roles like a ward manager, who supervises a given clinical environment. Participants described managing work as a complex activity that serves patients, staff, and the hospital.

> *So, my nursing work would be keeping the department safe, making sure the staff are happy, making sure the patients are happy and making sure that we get doctors, get different specialities having to come and see the patients (P8. Adult nursing, ward manager).*

This participant's work created an environment where people doing clinical work could do so with relative ease. Nurses' managing work supported the whole organisation, including multidisciplinary collaboration, patient flow, patient satisfaction, and support for staff.

Managing work could include managing a physical environment, such as running a ward. Generally, healthcare professionals such as physicians move around in a hospital, while nurses remain in a fixed location. This anchoring effect means that nurses are responsible for the activities in that environment.

> *[My work includes] looking at what would be considered very operational, so looking at things like flow and access but from a nursing perspective, because actually, if we get the flow and the access right, the quality of care delivered is better (P11. Adult nursing, senior manager).*

This participant explained that nursing managing work fosters better care for patients over business-focused outcomes like cost savings. Supporting patient movement in an organisation was a lever that could be used to direct patients to the most appropriate area to meet their needs.

Managing work can also be figurative, such as when nurses work in patients' homes. For one participant, this work included managing resources in the community. *I see my role as supporting people with learning disabilities to understand and manage their health needs and supporting other health services to understand and manage the health needs of people with learning disabilities (P16. Learning disabilities nursing, clinical nurse).* This participant's work ensured that her patients could access appropriate care from others, and navigate across the healthcare system.

Nurses' managing work supports patients' trajectories through the healthcare system. This work was necessary because of the complex chronic-illness management required by patients, in and out of hospital. Participants applied their managing work to sustain patient engagement beyond their immediate setting.

> *We can facilitate so they [long stay patients with infectious diseases] have free internet and free TV and stuff and we would respect if they want to stay awake until 3 in the morning and then they want to sleep in till 10, we would -providing they were stable- we would genuinely not wake them in that time. So, you would take them out of what is the normal routine of the ward and modify when they took their medications and stuff. And to, as best we can, try to give them some level of control. We would do things like send staff out to get them fried chicken (laughs) or McDonald's… stuff out of the hospital. So, we really try to give them as much choice as possible. We can't do that for everyone but again it's the type of person that it's worth making that investment in the long run (P18. Adult nursing, ward manager).*

This participant recognised that vulnerable patients would need to engage with the healthcare system for months to years in the future. Supporting patient autonomy and dignity built trusting relationships with these patients, meaning they would be willing to participate in long-term treatment. This participant

recognised the trajectory of patient care, and established an environment to support this trajectory well beyond the patient's discharge from that ward.

6.3.3. Enabling work

The third type of work participants reported was enabling work, which nurses identified as sustaining the nursing profession. Participants who do enabling work are not directly patient-facing. Instead, they work in capacities like education, research, policy development, and leadership. One nurse educator identified her work as preparing the next generation of nurses. *I don't have a hands on nursing role with patients, but ultimately I think the role that I do have can heavily influence the level of care that people do receive both now and in the future (P3. Adult nursing, nurse educator).* This participant recognised that teaching nursing students would have far reaching implications for quality in nursing. Enabling work has the broadest scope and longest timelines of nursing work, and is essential to maintain a pipeline of people and information to enter the profession.

Nurses reported that enabling work is often misunderstood or devalued. For example, a researcher stated that what she was doing was often seen as low priority by clinical colleagues, who privileged providing patient care over participating in research.

> *If we want drugs approved so that millions of patients in the future can benefit from these drugs, we have to be very careful about the information that we are putting in and make sure it's accurate. But they perceive you to be sitting at the computer doing nothing (P4. Adult nursing, nurse researcher).*

This participant felt enabling work was devalued by nurses who do clinical work, even though the enabling work had the potential for substantial impact. The participant recognised the need for roles in research, feeling that

other nurses privileged clinical work unfairly. *When I'm performing [clinical] tasks I'm seen to be a 'real nurse' (P15. Adult nursing, nurse educator).* Participants reported that enabling work was not recognised as real work to colleagues, and that visible clinical work was considered the true work of nurses. Participants were reconciled to this reality, and found value in personal knowledge of the significance of their work.

6.3.4. Summary

Clinical work, managing work, and enabling work are a continuum of nursing work, from policy development to patient care. The different types of nursing work are summarised in Table 17.

Table 17: Comparison of nursing work roles

Role	Timeframe	Proximity to patients	Level of experience	Example
Clinical work	Minutes-Days	Direct	Any	Clinical nurse
Managing work	Days-Months	Indirect	Medium+	Ward manager
Enabling work	Years	Removed	Medium+	Educator, researcher

In these types of work, nurses reported that they would do whatever was necessary to fulfil their roles. Lists of tasks do not represent how nurses understand their work. Participants viewed the nature of the tasks as secondary, because tasks did not distinguish one role from another. The scope of the role did distinguish types of nursing work, and this is how nurses understood different aspects of the profession.

6.4 Levels of adaptation in nursing work

Following on from the different scales of nurses' roles is the finding that adaptations also occur on the different scales. The larger the scale of the adaptation, the longer it took to materialise. This section explores the scale of adaptations in more detail.

6.4.1. Clinical-level adaptations

Nurses reported adaptations during clinical work. These adaptations may be short, discrete, and time limited. Nurses assessed a variety of factors before proceeding with clinical adaptations. For example, in community services, participants reported a partnership with patients. This relationship changed the types of adaptations that were acceptable for patients. Nurses adopted a different approach to adaptation in community settings, to prioritise acceptability for the patient. This participant demonstrated this principle in action:

> *If you've got someone who's at risk of developing a pressure ulcer and you want them to be on an air mattress, in a hospital you will just put an air mattress on their bed and that's that only bed they have to sleep in, and you will say, "Well, you're at risk of developing pressure areas so we've put you on an air mattress." And 9.9 times out of 10 the patient will go, "Okay, that's the bed I'm sleeping on." If you've got someone at home who's shared their bed with their husband for the last 40/50 years, it's a double bed, they like sleeping with their husband, but they are at risk of pressure ulcers, and they might have terminal cancer, they might be palliative, there might be some other stuff going on, and you come in and say, "You need to go on an air pressure relieving mattress," which absolutely is clinically the right thing for them to do, they're at risk, they need to be on that mattress. Quite often you might get people just say, "No, actually, I don't want that. I want to stay in my bed with my husband because that's where I've slept for the last 50 years and that's where I want to be" (P13. Adult nursing, district nurse manager).*

This participant's example demonstrates how she compared best practice guidelines with a patient's preference, prioritised, and applied her judgement

and supported the patient's interests over following the policy. This complex process demonstrates how much nursing work went into the decision to keep the patient's current bed. Such is the nature of clinical adaptations in nursing work.

6.4.2. Ward-level adaptations

Nurses reported adapting their work at a ward level, or equivalent. These adaptations may have occurred by mutual consent of staff, with the understanding that the adaptation was recognised in the setting, if not widely disclosed elsewhere. As with the clinical level, ward-level adaptations were pragmatic attempts to save time without compromising safety. This participant explained a mutually agreed on way of transferring neo-natal patients more quickly:

> *So, if we are moving a baby from one room into the next, downgrading them down to the next room, I suppose there are 2 ways to do it. Either, what we do is just, obviously not when they are on a ventilator but we're talking about when they are just on a little bit of oxygen for example – we will just unplug them from the wall, push the incubator through to the next room and plug them back in and they are fine. That is very quick to do and doesn't cause them any harm, if we think they are not going to cope then we wouldn't move them anyway. I suppose probably the gold standard of what we should do is move the baby with all its equipment into the transport incubator…and then move them through with all the equipment, taking twice as many nurses, and then move them back into their incubator in the next room (P12. Children's nursing, clinical nurse).*

This participant supported moving babies in their incubators because there was minimal perceived risk, and it made the work of the ward easier. Her nursing and medical colleagues agreed that the practice was acceptable. Nurses used adaptations like this to save time, and manage their workloads.

6.4.3. Organisational-level adaptations

Nurses reported their work could be adapted at an organisational level. These adaptations generally took months to create, and were often multidisciplinary. Nurses improved care at an organisational level by addressing issues across their care setting, often in several wards. An example is staffing in preparation for winter pressures.

> *We have to open beds every year. We opened it kind of tacked on to the end of a ward and that's just the way our wards are laid out. It put a massive burden on the team – the nursing staff and the doctors. We lost a lot of staff; sickness was really high. It was the right way to do it this year, because we hadn't made any plans, but it's not the right way to do it next year. So, we've already started to look, so I'm over-recruiting on my band 6's on every ward, so that next winter I can take a band 6 from every ward to go and work in escalation. I've over-recruited a band seven ward manager role for one of my larger wards so at times of escalation she can go and manage escalation to keep it quite separate from the ward that we added it on to. So that will just kind of provide easier opening and closing of that area as per demand… But also, the impact on then the team will be lower as they won't be working with as many temporary staff. They won't be stretched so far (P11. Adult nursing, senior management).*

This participant recognised that strategic changes to staffing and organisational management could have a positive impact for staff and patients during a high-demand part of the year. Adapting staffing levels and distribution allowed this participant's organisation to deploy staff effectively during winter pressures. This adaptation required forward planning and allowed nurses to move to areas of increased demand. Adapting work at an organisational level was difficult, but could potentially have widespread, positive impact. Organisational level adaptations are officially sanctioned, and sometimes applauded as quality improvement initiatives.

6.4.4. System-level adaptations

Participants reported a variety of adaptations at a regional or national level. These system-level adaptations required many stakeholders, and took a long time to develop and implement. A participant identified charities as an example of system level adaptation. She identified charities as the development of a resource to fill a gap in the NHS, and provide care to patients who are underserved. The charities were used to create large-scale workarounds when there was a clinical need, and no capacity in the NHS.

> *We did a lot of team education about some of the [nutritional] challenges that this patient group had and how we would address them, even though we didn't have dietetic support. And how we might link up with other healthcare professionals in the community or even in the hospital to address that. Was there any patient support that we could offer that wasn't person-centric, you know, patient education leaflets or things like that? And also, we decided that we would try and do a research project to really highlight the benefits of having someone addressing the dietetic needs of this patient group. And so, we got money for a research dietician. We got it by approaching charities (P7. Adult nursing, nurse manager at a charity).*

Participants identified some of the services that charities provide are an effort to bridge gaps in existing services. System-level adaptations represented ways of trying to provide additional support to vulnerable patient groups, outside of the resources that were currently available. System-level adaptations would include stakeholders beyond nurses, including patients, carers and families, other healthcare professionals, health administrators and others. The broad nature of these adaptations requires larger groups, more financing, and more time than other types of adaptations.

The above adaptations are led by nurses to improve patient care and manage their workload. There are circumstances where nurses do not adapt their work, and these are explored in the next section.

6.4.5. Not adapting

There are also circumstances where nurses do not adapt their work. One of the most prominent examples is relating to legal issues. This is clear with participants who work in mental health, where patients may be held in hospital under a section of the Mental Health Act.

> *There's really good practice where every night the medication charts are checked to make sure that everything that's prescribed matches the legislative documents that allow for those drugs to be prescribed. So, there's forms called a T2 and a T3 form, and a T2 form will specify all the medication that the patient is agreeing to take. And if something was prescribed that isn't on the T2 form then you can't give it (P6. Mental health nursing, student).*

This participant respected the legal responsibilities of nurses, to provide the medication exactly as legally permitted. Another example where nurses do not adapt their work is in adherence to research protocols. Participants recognised the strict permissions required to conduct the trials, and appreciated the need to follow protocols exactly.

There are also numerous examples where the nursing adaptation is not to adapt the care itself, and rather adapt their schedules in order to provide care. *I tend to end up staying at work until – but yeah. I could stay at work all night and still not get everything done that needed to be done (P16. Learning disabilities nursing, clinical nurse).* Across all participants, nurses acknowledged pressures on their breaks, or staying late, in order to complete their work. Rather than sacrificing patient care, nurses chose to make personal sacrifices and stay late.

6.4.6. Needing other people to adapt

There were also examples where nurses needed other professionals to adapt their work and accommodate a need. A participant reported how she

devoted time to educate other professionals on how to adapt their work to meet the needs of people with learning disabilities.

> *We do a lot of work with other services, supporting them to meet the needs of people with learning disabilities. So, we do a lot of liaison work with GPs around making sure they're doing annual health checks for people, that they're making reasonable adjustments for people (P16. Learning disabilities nursing, clinical nurse).*

This participant described how even routine tasks required considerable advocacy to achieve. The reliance on others' adaptations was also visible in expanded nursing roles. Nurses reported they had education to work at an advanced level, for example, advanced practice nurses. They were not always able to work to their full scope of practice, because senior colleagues did not support them to do so.

The nature of nurses' roles influences the scale of their work, and subsequently, their adaptations. The following sections examine adaptation in more detail, assessing why adaptation is required and how it is achieved.

6.5 The role of work-as-imagined

Revisiting Figure 13, the CARE model outlines how workers respond to misalignments in demand and capacity through adaptation. The CARE model serves as the organising framework for findings in the next section. This section presents how nursing work is imagined, how nursing work is done.

6.5.1. Work-as-imagined

Work-as-imagined is an integral part of nursing, which participants took seriously. They expressed the need to be guided by policies, evidence, and similar, to ensure that nursing work occurred at a professional standard. This is especially true for nursing students, who use work-as-imagined as the basis for their work.

> *And I, very sadly and unashamedly, spent about three hours looking through nine different Acts of healthcare safety regulations to look for any kind of guidance on a legal level as to what you should do and then how [cannulas] are disposed of safely (P5. Adult nursing, student).*

This participant went to great lengths to determine what work-as-imagined guidance existed over a disputed procedure. This participant was unable to proceed without establishing an optimal course of action. While participants may have not agreed entirely with their work as prescribed in policies, they nevertheless saw work-as-imagined as the foundation for their work.

However, formal guidance is not the only example of work-as-imagined that participants identified in this thesis. Participants used informal and internal sources as standards to guide their work, in addition to formal policy documents. This section discusses the distinctions between different types of work-as-imagined, and the impact of each, beginning with external, formal sources of work-as-imagined.

6.5.2. External formal sources of work-as-imagined

There are numerous types of work-as-imagined that guide nurses' work in an official capacity. They also create elements of universality in nursing practice, around standards and licensure. Examples of external formal sources of work-as-imagined are discussed below.

6.5.2.1 Legal requirements

Participants reported that the Nursing and Midwifery Council (NMC) guidelines and legal requirements were the most important factor guiding their work. This form of work-as-imagined was dictated by an authority and accepted. NMC standards were the basis of teaching and clinical work.

...Supporting the students and also supporting the staff to support the students

within, ensuring that they meet all of the NMC standards, in providing person-centred care for the patients that they care for (P3. Adult nursing, nurse educator). The participants, like this educator, used the NMC standards for the basis of their work and valued the standards' role in shaping nursing care. Legal guidelines also provided an objective standard for nurses' work, particularly in mental health.

> *[We need] a really strong grasp of the Mental Health Act, and the legislation. Because if you don't scrutinise detention papers properly, you could be detaining someone illegally. If you don't carry out the consent to treatment properly you could be treating someone illegally… we need to know the legislation really well (P6. Mental health nursing, student).*

This participant reflected all nurses in this thesis by emphasising the importance of legally sound work, and the precautions taken to ensure, for example, consent was obtained.

6.5.2.2 Targets and policies

A median level of external formal sources of work-as-imagined was found in NHS targets and organisation-specific policies. Participants reported these sources as being important for their work, and actively consulted policies for guidance. Some participants acknowledged that the targets were important for high quality care.

> *Our performance indicators are there for the patients. So the ED 4 hour target is a really good one because a lot of people say it's a target… but actually if there is a patient in A&E who is sat there, and they shouldn't sit there for 12 hours, it's not good for that patient in terms of the quality of care they provide, because an ED nurse's priorities are changing as people come in through the front door (P11. Adult nursing, senior manager).*

This participant traced the target to its impact on patients, and agreed that the guidance was needed to support patients.

6.5.2.3 Evidence

Participants also identified evidence as a source of external formal work-as-imagined. Evidence could come directly from research, or from educators or managers who acted as intermediaries, relaying evidence-based guidance. Participants verbalised that their work would ideally be evidence-based, but acknowledged that this was not always the case. This participant explained how evidence informed his work but could not be applied forthwith because of the patient population.

> *And the experience that you got, probably with the patients, especially when you are dealing with a lot of quite rare conditions, where the evidence is very rarely that strong, because you don't have enough data and enough patients so you end up moulding what you get in terms of recommendations and guidelines to what you see in your practice (P9. Adult nursing, outpatient clinical nurse).*

Evidence was cited as an important part of nurses' work-as-imagined, but one with limitations. In the event of rare diseases, participants reported that they used evidence more than other forms of work-as-imagined, because there may not necessarily be a policy or protocol that related to their patient population. These examples demonstrate the limits of evidence in providing guidance for nurses' work.

6.5.2.4 Summary

Different forms of work-as-imagined were taken seriously by participants. Participants acknowledged that policies had value, even if they were not followed exactly. *Different hospitals have got different policies. But usually 1) this is what you do, 2) this is the policy and then, 3) we'd never do this (P9. Adult nursing, outpatient clinical nurse).* This participant verbalised that there were unspoken norms to how policies could be used [or not] in the clinical setting, but that there were limits to how far a policy could be set

aside. The example of the Mid Staffordshire inquiry was also cited as a reason that policies must be followed. *We know it happened with Staffordshire and things when people breached the policy and things like that (P15. Adult nursing, nurse educator).* This participant described policies as a safeguard against unethical situations. This statement underlines how policies may be viewed as safeguards, despite their limitations.

6.5.3. External informal sources of work-as-imagined

While nurses readily discussed formal types of work-as-imagined they also spoke of unwritten, yet equally influential aspects of their work. These types of work-as-imagined were not standardised like a policy but directed many routines in nurses' work.

6.5.3.1 Workplace norms

Nurses acknowledged that the structure of their work was often dictated by the norms of their setting, whether these reflected evidence or not. Participants verbalised how their work was based on what was normal in their clinical setting. *We've got these strict timings in hospitals, or even when we wash patients. We do things because of culture and because that's the structure (P19. Adult nursing, critical care nurse educator).* This participant spoke about how she could see the impact of standardised working when she left that clinical setting, but at the time, it was accepted as normal. Routines were determined by convenience and organisational norms. Participants noted that their work was heavily influenced by their workplace culture, even if this was not always acknowledged. The influence of social norms was reflected in workplace culture, these examples emphasised the influence of these norms on nurses' work.

6.5.3.2 Patient expectations

Patients' expectations also influenced nurses' work. In these findings, patient expectations are broad ideas of healthcare delivery, rather than individual patient preferences. Participants reported that patients may expect them to have all the answers to treat a complex condition, which was not always possible. In turn, some patients did their own research, and requested novel treatments that were not necessarily available or proven safe.

Patients' expectations required nurses to find ways of supporting patients in an imperfect system. For example, this participant described how a patient presented with an emergent complaint, but did not want to wait to be treated.

> *I blame it on the Amazon culture …. I just find it preposterous that somebody will present to A&E, have an emergency CT head, then won't wait for the result (P8. Adult nursing, ward manager).*

This participant reflected on how patients did not recognise the constraints of the healthcare system, and had unrealistic expectations of how care occurred. Participants illustrated how patients wanted the same level of customer service they received in other settings, even though this was not possible in the NHS, as it is currently organised and funded. A participant reported that patients' high expectations were reinforced by charities, even though these expectations were unmanageable for that setting.

> *The charities have a different set of expectations. They are on the whole, solely related to patients. So, for example, charities will be very much, "You should expect this from your care," and it's not really related to thinking about budgets and costs and the state of the NHS (P7. Adult nursing, nurse manager at a charity).*

Nurses in this thesis did not deny that patients had a right to expect good healthcare. Rather, nurses felt that these expectations were disproportionate to

what was realistic in the current system, and that patients' visions of work-as-imagined could set nurses up to fail.

6.5.4. Internal sources of work-as-imagined

Participants reported their own internal sources of work-as-imagined that guided their work. Personal standards were a potent form of work-as-imagined and held much more emotional weight than external sources such as policies. Participants reported that they developed their internal sources of work-as-imagined early in their careers. Some nurses also demonstrated a degree of flexibility in their personal standards, while other participants struggled when their aspirations were not attained.

Participants reported that their work-as-imagined included their own personal plans and standards for their nursing work. Participants wanted to work at a high standard, often referencing 'what I would want for my family' as a benchmark. This participant described how she felt when she could not work the way she wanted:

> *We all come, other than a very few nurses, we all come to work to do the best job… and it's very, very hard when you can't meet targets that you're meant to meet. It's awful. You feel like you failed the patient. It's awful (P12. Children's nursing, clinical nurse).*

While this participant refers to targets, her comments illustrate how feelings of failure run far deeper than organisational measures. Participants also judged other nurses for their personal standards, and whether they were high enough. For example, a participant commented on receiving patients from another part of the hospital: *I receive patients from surgical wards that should have come to us and I see that the care is not what I would deem to be acceptable (P18. Adult nursing, ward manager).* This participant's standards were higher than

those from other areas, perhaps without having knowledge of the context and demands in another area.

Closely aligned with personal standards were participants' internalised versions of 'the right care'. These ideas were a participant's image of what a nurse should be and do. The historical legacy of nursing influenced one participant.

> *We have to be Mother Theresa all the time.*
>
> ***Interviewer**: I know this is maybe a big question to place on your shoulders but where does that come from?*
>
> *I don't know. Maybe I blame Florence Nightingale! (both laugh) Or the saints, I think there is a halo effect around nurses that we are these selfless creatures, and a lot of what we do is, but it is our job at the end of the day, and we have our own lives and our own families and our own fears and aspirations and hopes (P2. Mental health nursing, student).*

For this participant, the idea of Florence Nightingale or a saint represented the characteristics that nurses were expected to embody. Other students also commented that nurses had shared values or had to be a certain kind of person. These ideals were impactful for students undergoing professionalisation, illustrating what nurses envisage as the right version of themselves and their work.

6.5.5. Summary

Overall, nurses accept work-as-imagined as the foundation of their work, but know that they will not always do what policies dictate. They recognised and valued formal sources of guidance and use them as the basis for many of their actions. Participants acknowledged that policies are imperfect yet prevent unsafe work and protect patients. Participants also described unwritten influences on their work, including workplace culture, patient expectations,

personal standards, and internalised versions of the 'right' care. The latter were more influential, as policies may apply to a particular patient or procedure, but workplace culture impacted participants' overall approach to their work. These factors are influential as nurses face challenges that require them to adapt their work. Factors that necessitate adaptation are explained in the following section.

6.6 Why nurses need to adapt their work

In the CARE model, the need for adaptation occurs when demand and capacity are not aligned. Participants affirmed that this is one reason to adapt their work. *There is sometimes a gap between what is seen to be the policy and procedure and what is happening on the shop floor (P7. Adult nursing, nurse manager at a charity).* However, participants identified other reasons work needed to be adapted, beyond misalignments. The following section reports misalignments between demand and capacity and also other reasons for adapting work.

6.6.1. Misalignments between demand and capacity

The CARE model highlights the need for adaptation based on misalignments between demand and capacity. Participants reported both excess demand and insufficient capacity as causes of misalignments, which are discussed in the following section.

6.6.1.1 Overwhelming demand and excess pressures

Nurses reported facing significant demand at work as a major source of pressures. Clinically, demand occurs when there are more patients needing care than there are beds or staff, or when the acuity of patients rises. These pressures are commonplace and occur widely across a healthcare system. *It's*

just all the pressure on, there just aren't enough beds (P8. Adult nursing, ward manager). An increase in demand occurs for various reasons, such as winter pressures. Pressures could also occur because there were not enough beds or resources in the area where they were needed.

Pressures can be moved or pushed along the system, as one area tries to compensate for a lack of resources by moving a patient or an issue on to another department. *It's like a hot potato (P9. Adult nursing, outpatient clinical nurse)*, explained a participant who recognised that many referrals to his department were a result of community services trying to move the patient along the system, to keep the community case load manageable.

6.6.1.2 Insufficient capacity

Participants reported that many misalignments were the result of insufficient capacity. These insufficiencies included time pressures, short staffing, and financial pressures. These findings are presented in this section.

Time-saving adaptations were the most common type of adaptations that participants used in their work. The need to save time demonstrates the pressures that nurses feel most acutely in the clinical setting. This participant reported time-saving adaptations used on her ward:

> *I guess that the main sort of… cheats that we have would be stuff with drugs. (pause) So like checking them and then having them out for a bit before you actually use them or before you put them up (P1. Adult nursing, clinical nurse).*

The negative language used by the participant to identify the adaptation suggests that her environment would not have been supportive of this adaptation if it had been revealed. Participants referred to some adaptations in negative terms, such as cutting corners or cheating. Participants reported these adaptations as though they were ashamed of them, rather than feeling proud of

making positive adaptations. Having an adequate number of staff was a major issue for participants. There was a mix of discussion around having enough staff, and having the right complement of staff, in terms of skill mix and scope of practice. Staffing pressures were a concern for nurses in all settings. This participant reported how a focus on patient flow and physician surgical numbers meant that nursing staffing resources were stretched.

> *Everyone sort of feels like the matron on that unit is more pushing for the surgeons to get their operations done, rather than thinking about ok, how are the nursing staff doing? Are they feeling overworked? Has there been a particularly high turnover? Has there been a particularly high acuity? Should we be thinking, you know, we should do less operations just so that they can have a bit of breathing space? (P1. Adult nursing, clinical nurse).*

Staffing misalignments were identified as a constant source of pressure, and that system-wide, there are not enough nurses to provide care. Nurses had a sophisticated view of staffing, and considered getting the right people as more important than having the right numbers. For those away from the bedside, the response to staffing shortages was to focus on recruitment and retention.

Financial pressures also had an impact on nursing work. Participants who manage clinical work reported that they were worried about budget constraints. Participants also reported that efforts to reorganise the healthcare system created financial pressures. *One of the challenges we've got at the moment is budget and finance. Since the health and social care integrated there seems to be a smaller budget and there's obviously gonna have to be a lot of changes (P3. Adult nursing, nurse educator)*. There was a universal concern that nursing work was being adversely impacted by inadequate funding.

6.6.1.3 Patients who do not fit the 'norm'

The most striking examples of adaptation came from nurses who stated that their patients did not fit the norm, and thus, their work had to be adapted to meet the patients 'where they were at'. One nurse reported on the diverse populations that were seen in his service, where there was no relevant policy for the needs of these patients. *They told me, if you work with the people who are excluded in society, you'll find your service becoming excluded (P6. Mental health nursing, student).* Nurses reported that their work occurred outside the delivery of mainstream services. Nurses needed to overcome systemic barriers or prejudices for chronically marginalised patients. This participant explained how she adapted work on her ward to build trust and support patients who required long-term admissions.

> *So, the policy would require that they're in a room suitable for isolation, which we can accommodate and I'm sure it would stipulate that leaving the room should be minimised to necessary clinical investigations. However, often the types of patients that are more likely to come in with acute presentation of a TB infection may be homeless and have multiple, for example, drug and alcohol dependencies so when they are coming into hospital, they're not just unwell with potential TB, they are also withdrawing from often multiple drugs and alcohol and often they are very used to being on the street and not to being inside, in an environment. We struggle a lot with behaviour and keeping that person and the staff safe when potentially confining them to a room. So often we will, in discussion, choose to go against that policy by allowing them to go outside wearing a mask with a staff escort and allow them for example to get out of the confinement of the room…When you are withdrawing from drugs and alcohol and you've have had a lot of stuff happen to you. You are going to struggle. I don't think the policy is empathic to the differences in individual history (P18. Adult nursing, ward manager).*

This participant recognised the need for individualised care, in order to help patients engage with treatment across a long trajectory of care. Participants explained that they work outside policies to meet needs that are not being met in mainstream services. In these instances, the patient population is outside the

norm, however defined, and nurses needed to adapt care because policies are not appropriate, incomplete, or simply do not exist. Patients outside the norm present an opportunity for nurses to be creative and advocate for patients when the system is flexible enough for nurses to adapt their work and meet patient needs. These examples demonstrate misalignments because the systems in place are not designed to match the reality of these patients' situations.

6.6.2. Additional reasons for adapting care

Participants in this thesis affirmed the need to adapt because of a misalignment between demand and capacity, as proposed in the CARE model. This thesis adds that nurses adapt their work for other reasons that are not included in the model. These other reasons to adapt work and the associated emotional impact are discussed in the following section.

6.6.2.1 Opportunities for improvement

Nurses may adapt their work by identifying opportunities for improvement based on clinical experience. One participant reported that their workplace had regular 'improvement presentations' where staff would submit ideas to improve practice, and they would be incorporated. These did not necessarily result from a previous negative outcome. Rather, they were ways to streamline or improve the provision of care. An example was the development of a standardised hypoglycaemia [hypo] management kit for community nurses. *So, if someone was hypoglycaemic, rather than like going in the cupboards to find what was there, actually we've got the hypo pack, so we've got all the things with us (P13. Adult nursing, district nurse manager).* This suggestion from a clinical nurse was adopted by the organisation, potentially improving care for all patients.

6.6.2.2 Patient request or preference

Another source of adaptation for nurses was from patient need or preference. Nurses customised their work for patients, to limit the impact of illness in their lives. The following example presents a nurse who worked with a patient to adapt a dialysis procedure to limit the social implications of his chronic illness.

> *I had a chat with him and said are you really doing all your [peritoneal] dialysis? and he said, well… no… because I do the gym on this night and I play football on this night and don't like the feeling of having dialysis fluid in me when I'm in the gym and playing football. So, I said 'right, we can sort this out, we can make it so that you don't have the fluid in' and actually because we accommodated that, what he wanted to do, he missed less dialysis, his creatinine came falling down (P10. Adult nursing, clinical nurse).*

This nurse appreciated the patient's priorities, and they worked together to manage his medical requirements with activities for his quality of life. These adaptations supported the patient's engagement with his treatment, and a sense of control in the face of serious illness.

6.6.2.3 Nurse preference

Nurses also adapt their work based on what they like doing, in addition to patient requests. When nurses had a degree of flexibility in their time, they could choose to engage with different activities. One participant described the differences in preferences of her and her colleagues:

> *When we did have quiet days, people didn't then go and spend more time with the patients, they would just stand around chatting, and I was a bit like, I'm not really here just to chat to you guys, I'm going to go and see if I can do something with a patient, I'm going to go and sit and chat with an old dear for half an hour. I really enjoyed that part of my job (P1. Adult nursing, clinical nurse).*

This participant used her spare capacity to speak with patients, which she enjoyed. This example demonstrates how nurses will choose their work based on what they like doing, when their environment allows this flexibility.

Opportunities for improvement, patient requests and personal preferences are examples of when nurses adapt their work. These examples add a novel finding to the CARE model by demonstrating that nurses face other sources of demand, beyond misalignments between demand and capacity. Nurses meet the need for adaptation by applying a variety of their skills and resources, which are discussed in the following section.

6.7 Resources nurses use to adapt their work

Nurses reported a number of resources that enabled them to adapt work and overcome misalignments between demand and capacity, and other limitations of their environments. These resources are internal, and also developmental. Nurses reported that their ability to adapt work generally improved across their careers, as their experience increased. Nurses also drew upon external resources, like their colleagues and organisational supports. The following sections explore resources for nurses to adapt their work.

6.7.1. Personal resources: Judgement

Judgement is the central resource that nurses use to adapt their work. For participants, judgement is the bridge between possibilities and outcomes. In this thesis, judgement refers to the mental exertion associated with work, including prioritising, decision-making, problem-solving, and planning. Participants recognised the application of judgement as an essential part of their work. Examples of judgement are discussed in this section.

6.7.1.1 Experience

The first of these was experience. Nurses explained that experience enabled them to develop different strategies for adapting work. A nursing student highlighted how her clinical experiences helped her to understand nursing work beyond her classes.

> *I think as a student we get told in class but you really learn a lot more in practice. But a text book can only explain so much, whereas when you are in practice you actually see how that particular team works, how they gel together, how they delegate tasks, how they work as a team (P20. Adult nursing, student).*

This participant recognised that collaboration and decision-making could be observed and learned through the examples of other nurses. The means of applying judgement are described further in the following section.

6.7.1.2 Prioritisation

Prioritisation was a constant form of work for nurses. In all settings, patients were the top priority. Nurses put patients first, and prioritised their care over other work. The responses from participants indicated that they devalued activities that they did not perceive as benefitting patients. Prioritisation was ongoing, and occurred throughout a nurse's day. Students reported learning about prioritising by hearing about how other nurses prioritise their work. This participant reported learning about prioritisation by identifying possible outcomes: *So, if you prioritise personal care over a patient that's acutely unwell, the patient could then deteriorate even more and go to a different department, when if you'd done something beforehand, that could have been avoided (P20. Adult nursing, student).* This participant explained that the need to develop prioritising skills began early in a nurse's career, which were an essential part of the role.

6.7.1.3 Decision-making

Decision-making is an additional form of nursing judgement. Participants reported that nursing work required constant decision-making. These decisions were complex, and often involved a moral or ethical dimension. Decision-making in nursing work was challenging, often without a straightforward answer. This participant explained how her decision-making involved choosing between best practice or what her organisation technically permitted:

> *What we should do is just inject the saline, which we are allowed to do but that's not as safe as using the lifting solution. So, in that situation we've got a difficult situation. Do you do what you are allowed to do or do you do what is known to be the safest course of action? (P14. Adult nursing, advanced practice nurse).*

These decisions were reported as difficult and unsettling for nurses to manage. Beyond their immediate work, nurses also influence other peoples' decisions, and contribute to the collective decisions of all staff.

6.7.1.4 Problem-solving

Problem-solving was another notable application of judgement for nurses. Nurses reported problem-solving as a constant part of their work. Problem-solving relied on creativity, and using available resources to meet patient needs. This senior nurse saw a patient needing assistance, and helped ward nurses address the issue:

> *I walked down the corridor on the ward and I saw there was a man who was obviously delirious and they had put a gown on him, but it was very hot so he had pulled all his sheets off and was …otherwise uncovered… (both laugh) so I went in and covered him up and I had to speak to the nurse in charge anyways, so I said to her, was she aware, and my advice would be maybe they would just like to put some trousers on him because then they wouldn't have to worry about him pulling the sheet off and then he would probably be cool enough. So, then she obviously then delegated that task to someone else. So, it can be as simple as just helping people to problem solve, and pick up*

> *things that, because people are busy, maybe not have clocked onto their radar (P18. Adult nursing, ward manager).*

This participant valued a collaborative approach, and recognised that nurses may not have been aware of the man's needs because of other issues. Nurses in this thesis reported a similar approach to problem-solving, regardless of scale. They brought people together to share ideas and identify resources, and tried different strategies to improve care.

6.7.1.5 Planning

Planning was also identified as an aspect of judgement. Nurses reported planning locally, and across wider spheres of influence. Planning involved anticipating possible needs for patients or other colleagues like physicians, and managing these needs as part of a nurse's own priorities. This participant discussed the planning that was required before patients participated in clinical drug trials. *There's safety things as well that you've got to have in place. So, there's a lot of anticipatory planning that goes into that (P4. Adult nursing, nurse researcher).* The participant had to plan and prepare for any eventuality, even though these plans would hopefully not be used.

Prioritising, decision-making, problem-solving, and planning are all ways that participants apply their judgement in their work. Judgement is a primary means of translating work-as-imagined into work-as-done, and nurses draw on other resources as well, which are explained in the following section.

6.7.2. Other personal resources nurses use to adapt work

Nurses valued confidence, and recognised the role that confident assertiveness could play in patient safety. When nurses felt able to speak about adapting work and patients' needs, they were more assured that they would get

the best outcome for a patient. This participant spoke about supporting students to be confident, especially with physicians.

> *And it's about the nurses being assertive and actually making sure that they stick to what they know is the right way to do things. And I think when you're in that situation sometimes it can be very difficult, particularly if it's a doctor and they're refusing to do it (P3. Adult nursing, nurse educator).*

Confidence enabled nurses to trust their judgement, and advocate for patients respectfully. However, confidence was also recognised as a double-edged sword, in that being too confident meant nurses might be cavalier about adapting their work. This participant reported what could happen if nurses thought that they knew better than a policy or protocol. *It can get quite easy to just cut corners and get a bit overconfident and not really recognise that [safety standards] are there for a reason (P1. Adult nursing, clinical nurse).* Nurses reported a need to balance confidence in adapting work, and also know the limits of adapting to preserve safety.

Nurses would adapt their work based on their personal preference. Participants reported many cases of adapting based on environmental factors, but it became evident that they also adapt their work based on what they like to do. This participant illustrated how she privileged some parts of her work over others.

> *It can be frustrating because every nurse is different. I enjoy the clinical side of my job and I hate the safeguarding side. I just… It just frustrates the life out of me so when social services are on the phone and they want to speak to me, I just don't want to talk to you right now. I know it would be unprofessional to say it but sometimes when I get those phone calls, I think, I just don't want to. But you have to do it (P12. Children's nursing, clinical nurse).*

This participant recognised her professional obligations at work, but also avoided work she disliked where possible. If nurses have options to adapt

work, they may select options based on personal preference. For example, a nurse could spend a few minutes speaking with a patient, or socialising with colleagues. The driver in this situation may be personal preference, over other factors.

6.7.3. External resources to adapt work

While nurses required considerable personal resources to adapt their work, they also needed external factors in their favour. Nurses needed organisational support and teamwork to adapt their work effectively. Both factors are discussed in the following section.

6.7.3.1 Organisational support

Nurses were empowered to adapt their work in the service of patients when they had adequate supports. These supports were most notable in their absence, as participants could identify when they did not feel supported by their organisation. One participant reported how the lack of support for staff contributed to her decision to leave an organisation.

> *I remember saying to my boss, "I can't believe what I've seen. This is outrageous." And she didn't listen to me. She is like a very senior nurse. And I said like, "Well, it's just shocking." And she said to me, "I don't think it's different to anything that you'll see in any other NHS hospital." And I said, "Well, that's beside the point. I've never seen it in any other NHS hospital." And then you're thinking of the Francis report in your head. And she just puts her hand up and says, "I'm not talking about it." and I was like, (sharp inhale) em! (P8. Adult nursing, ward manager).*

This participant felt that the care she witnessed was inappropriate, but her senior colleague refused to acknowledge the issue. Other participants affirmed that if there is a lack of organisational support, it is difficult to adapt work or improve patient care. Participants described these environments as toxic, and did not continue working in organisations that provided little support.

In contrast, participants valued the presence of organisational support and its impact on their work. Organisational support was visible in examples like decision support for nurses who worked alone in community settings. In conjunction, nurse educators in this study reported providing support by soliciting feedback, updating policies, and making education accessible. Nurses who worked away from the bedside engaged in a feedback loop with nurses who work clinically to identify areas where organisational support was required, and address that need.

6.7.3.2 Relationships and teamwork

Participants highlighted the importance of the relationships among healthcare professionals, and the teamwork amongst these colleagues in adapting work. Teamwork was instrumental in nursing work, as no practitioner worked in isolation. Teamwork could be through formal or informal means. A participant explained how a spirit of collegiality made it safe to ask for help:

> *I think it depends on the environment you're working in, and the staff you're working with. A lot of the time, if it's a good ward, nurses and staff will just say, can you pick this up for me, I just don't have time to do it, or can you grab that call bell, I'm right in the middle of doing something, and if I lose what I'm doing now, I'll never get back to it, or… I think a lot of that comes down to teamwork, really (P2. Mental health nursing, student).*

This participant identified how teamwork influenced a ward, and the reciprocal role of seeking and giving help. Having colleagues work together facilitated delegation, confidence, and use of experience, which all contributed to adapting nursing work.

Teamwork was heavily influenced by the relationships among nurses and other healthcare professionals. Supportive relationships included a willingness

to ask for help, and the assurance that support would be provided. Nurses described their role as the central coordinating force of the patient's care. This role was made possible by positive, reciprocal relationships with nurses, and with other colleagues.

> *So it's a really good system 'cause generally speaking these individuals [psychologist, psychiatrist, occupational therapist] are really highly skilled and they are really knowledgeable, and they're only positive influences on both the staffing team and the patient population. They are really good assets to have, really excellent resources (P6. Mental health nursing, student).*

This participant recognised that colleagues were a supportive influence on everyone's work on the ward. These relationships fostered collaboration and open conversations, to draw on the experiences of others for adaptation. Supportive relationships were highly valued by participants because teamwork improves the experiences for everyone.

All the above factors supported nurses in adapting their work. The outcomes of these adaptations are presented below.

6.8 Outcomes of adapting work

Outcomes are unpredictable in complex adaptive systems. Nurses in this thesis described the perceived outcomes for patients or the system. Patient outcomes were distinct from the outcomes nurses experienced, as a result of adaptations. These contrasting ideas are reported in the following sections.

6.8.1. Outcomes for patients and the system

A distinct dichotomy was present in participants' beliefs about outcomes: either a) success is subjective or b) there is a right way and a wrong way to provide care. Both perspectives are contrasted below.

6.8.1.1 No certain outcomes

Many of the nurses in this thesis reported that success is subjective. What was considered a measure of success by a nurse is not necessarily what a patient would deem acceptable. These participants gauged their success relative to patient outcomes, and accepted that they could not always get it right. Participants' perspectives on the relative nature of success are presented in the following section.

Nurses in this thesis reported that there were situations that had no correct answer, or no clear successful outcome. This view represented a sophisticated understanding of nursing work, and was held by more experienced nurses. In contrast, some student nurses saw nursing work as a dichotomy, with right or wrong actions. While the mental health nursing students held a more nuanced view, adult nursing students struggled to see work with the same degree of sophistication. For example, a mental health nursing student recognised that there were times when a patient's small steps forward were an achievement. Here, the participant discusses a situation where he debriefed with a patient who had been violent after smoking in his room.

> ***Interviewer:*** *That was still a successful interaction even though the patient behaviour hasn't changed [smoking continued]?*
>
> ***Participant:*** *That's true. It definitely wasn't an unsuccessful or a damaging interaction, he didn't then enter another distressing episode, he didn't become verbally aggressive or anything, and he didn't tell me to, you know… he didn't tell me to go away. So, on an interpersonal level it definitely I would say was successful (P6. Mental health nursing, student).*

This participant felt that a positive interaction with a patient was a step forward after violent behaviour. Some participants described variability in patients, and how patients' complex needs create situations where there are no

clear right answers. Some nurses reported that success meant improving the patient experience, if not changing the outcome. Participants explained that just as patient care is individualised, patients' goals are individual as well.

6.8.1.2 Right and wrong ways to work

In contrast, some participants in this thesis felt that there were right and wrong approaches to work. This perspective was prominent among the adult nursing students in this study. Nurse educators also reported that their students may have fixed ideas about what appropriate care entailed. For example, this nurse educator responded to a student complaint:

> *I've had one instance where we had a student who potentially was unhappy with some of the care that she'd seen experienced on the ward, but it was more about the student's perception and understanding as to why decisions were made around a specific patient. And I think there's often times where there's that grey area, it's not always black and white, and I think you need to be able to look at it from that wider perspective. And I think part of the learning when we did the review was that that particular student didn't quite understand that (P3. Adult nursing, nurse educator).*

This participant appreciated that the student wanted to ensure patient safety, but did not appreciate the complexity of the patient situation. This participant described conflicts when there was a clash of perspectives about what was acceptable nursing work.

6.8.2. Errors

Even when nurses took a pragmatic view of patient outcomes, there was a limit to flexibility. Participants reported that some actions and outcomes were unacceptable, regardless of context (such as those related to the Mid Staffordshire Inquiry). In general, nurses with more experience were empathetic to other colleagues, and recognised that patient outcome did not

necessarily reflect a nurse's actions. A participant reflected how nurses were placed in unsafe situations due to a lack of staff or resources:

> *I think we try and mitigate and then it's testament to how skilled nurses actually are that we manage to mitigate a lot of the risks that we are forced to take, but we are forced to take them (P1. Adult nursing, clinical nurse).*

Participants also expressed fear that they could be blamed for outcomes they did not necessarily control. Experienced nurses recognised the potential impact of the environment and that anyone could make errors if they were not supported.

> *I think because so many medicine errors happen and I think a lot of them happen because of external factors. So, time pressures, stress levels, people interrupting, phone calls, conversations, doctors coming and asking for something, parents coming and asking questions, all of these things, you have to go back to the beginning and start again. I hate being interrupted while I'm doing medicines (P12. Children's nursing, clinical nurse).*

This participant recognised that medication administration was a critical moment to protect patient safety, but could not control her environment enough to ensure she was not interrupted. This nurse reflected other participants in the study who worried about outcomes, because of their environment.

6.8.3. Personal outcomes for nurses

In addition to the outcomes for patients, there are also outcomes of adaptation for nurses. The positive and negative outcomes of adapting nursing work are explored in the next section.

6.8.3.1 Positive outcomes

While the burnout narrative is a familiar one in nursing, many nurses moved between jobs because they craved additional challenges, wanted to learn more, had opportunities to try new things, or had a passion for a

particular field. They acknowledged the burden of their work, but still enjoyed it and engaged with the process.

> *It can be challenging to stay with that critical thinking. Because you start at 7 and you finish at 8pm. And that's a really, really long time to continuously stay engaged and rest enough for the next day to come back and do it again for several days in a row maybe. But personally, I love that. I enjoy it, so it's not really work because I'm kind of learning, it's more like play, not to make it sound like I'm not taking it seriously, because you're dealing with people and safety, and people's lives. And you do have to take that seriously. But it doesn't always feel like work (P5. Adult nursing, student).*

This participant explained that the mental and physical work of nursing was difficult, but he also enjoyed the creative problem-solving that came with adapting his work. Experienced nurses described their work as cyclic, with times where the outcomes for them had been positive, and other times that were more challenging.

6.8.3.2 Neutral outcomes

Nurses did not see patient requests as being particularly emotive. Interruptions or adaptations due to patient needs were seen as routine. Nurses felt these types of adaptation were part of the purpose of their work, and generally were not fazed by reasonable requests. *Just get on with it… to be honest. I don't really have a sort of feeling. (Laughter) [changes for patients are] just part of the role, they're just part of nursing (P13. Adult nursing, district nurse manager).* This experience contrasted with nurses' experiences of adapting because of misalignments between demand and capacity, which were stressful experiences. Participants reported that adaptations to meet patient requests were opportunities to support patients, which is why they had become nurses.

6.8.3.3 Negative outcomes

Nurses described the negative physical and emotional consequences of work, particularly at the clinical level. Some nurses left clinical practice, or divided their hours between clinical work and managing or enabling work, in order to minimise these consequences. Nurses struggled to work to their personal standards, and found that they sacrificed their own time to do so. A participant explained: *You can be on a late shift that would finish at half 9, but people are still there at 11 o'clock at night finishing off their notes (P2. Mental health nursing, student).* Some nurses accepted this personal sacrifice as a necessary part of their work, while others experienced negative personal outcomes. This participant worked seven days per week to keep up with the demand in her role, and experienced negative consequences as a result.

> *I didn't realise how stressful or life -taking- over my job was until I left. I didn't see that at the time. I didn't feel stressed, you know. I didn't mind doing work at weekends and stuff like that. And now I – and sort of I realise that that came at a price to me, really, and my other life, my non-nurse life (P7. Adult nursing, nurse manager at a charity).*

Participants reported that their work was challenging, and largely unrecognised by patients and colleagues. Even if not to the extent of the previous example, nurses reported feeling unappreciated and overworked. The burden required to adapt nursing work constantly, for a myriad of reasons, was invisible work that went unacknowledged. Participants reported frustration, wishing their difficult work was recognised and appreciated.

6.9 Summary

These findings present a new model for understanding nursing work: a model based on the role of a nurse's work in the healthcare system, including enabling work, managing work, and clinical work. The new framing of roles is

crucial because it creates a frame that allows for nursing adaptation. Models that are based on nurses' tasks or competencies do not allow for adaptation in the same way, and ultimately fall short during nursing work. Nurses engage with a variety of tasks and activities to achieve their goals within their roles, without the tasks being the defining feature of their work. This model means that nurses can adapt and change what they do, because their understanding of their work-as-done is flexible and responsive.

The purpose of a model of roles for nurses is to facilitate their adaptations, which is an element of nursing work that is not recognised by nurses themselves. Adaptations represent a hidden aspect of nurses' work, as nurses create adaptations constantly, but may view them as deviant. Thus, adaptations may not be discussed openly, and a large aspect of nurses' work is unacknowledged. Adaptations in nursing work reflect the locus of control in nurses' roles. These adaptations can occur from a clinical level, up to a systems level. This finding corresponds with the purpose of different roles for nurses, i.e. clinical level work includes clinical level adaptations.

Nurses adapt their work for a variety of reasons, including known reasons like misalignments between demand and capacity. This thesis adds that nurses also adapt work because of their preferences, patient preferences, or opportunities to improve their work. To achieve these adaptations, nurses draw heavily on their personal judgement, as well as resources like organisational support and relationships with colleagues. Creating adaptations is difficult, skilled, and adds burden to nurses' workloads. The outcomes of these adaptations, for both patients and nurses, are variable. These findings have implications for nursing work, which are discussed in the next chapter.

7 Chapter 7: Discussion

This thesis aimed to develop a new understanding of nursing work, based on the insights of resilient healthcare theory, and extend resilient healthcare theory by assessing and discussing its applicability to nursing work. The objective of this chapter was to synthesise all findings to discuss and make recommendations for the nursing profession and workforce planning. A second objective was to discuss the application of resilient healthcare theory for nursing, and any relevant modifications to the theory. These items are both discussed with recommendations for clinical practice, policy and administration, education, and future research.

7.1 Introduction

There are several key findings from this thesis. The first finding is the contrast between models of nurses' work as viewed by nurse researchers and the nurse participants in this thesis. Nurse researchers have understood nursing work as domains of labour, while nurses themselves understand their work in terms of its role. This thesis adds two new models for interpreting nurses' work: 1) a model of different domains of labour (Figure 9), and 2) a model of nurses' roles (Figure 18). These models are complementary, rather than contradictory. The domains of labour model is supported by evidence (Chapter 2), and demonstrates different aspects of what nurses do. The model of nurses' roles reflects how nurses in this thesis understand their work (Chapter 6), and create a frame for interpreting the adaptive capacity inherent in this work. Both models serve to illuminate different aspects of nursing.

This thesis contributes to the understanding of resilient healthcare, and adds detail to the CARE model. The creation of *Resilience Challenge* is an

original contribution as a means of relaying resilient healthcare concepts in an engaging format that prompts reflection. There is also a methodological contribution from using a serious game as an elicitation tool. This thesis also demonstrates that the CARE model can be applied to understand adaptation in nurses' work. The contributions of this thesis to the model are 1) an expanded definition of work-as-imagined, 2) identification of additional reasons why nurses adapt work, 3) explanation of how nurses adapt their work, and 4) different perspectives on the outcomes of adaptation. These findings advance the understanding of what nurses do, and how they work in complex adaptive systems, and provide an empirical example of resilient healthcare in nursing.

There are several potential impacts from these findings. Among these are the fact that nursing discourses can be enriched by recognising the role of adaptation in nursing work. Resilient healthcare is strengthened by having exemplars from nursing, the largest proportion of the healthcare workforce. The application of the CARE model to nurses' work can add value to the understanding of complexity and adaptation in healthcare. In sum, work may be studied and understood more effectively, enabling better healthcare decision-making and workforce planning. This chapter discusses these findings in the context of relevant literature. Each major finding is explored, the strengths and limitations of the thesis are discussed, and potential implications for nurses' work are presented.

7.2 Contributions: Video game as an educational and elicitation tool

An original contribution to knowledge in this thesis is the development of a resilient healthcare video game and its use in interviews as an elicitation tool. *Resilience Challenge* translated concepts from resilient healthcare and

nursing labour to create an interactive serious video game. *Resilience Challenge* is a novel tool to communicate ideas and was effective in this study as an elicitation tool for exploring nurses' experiences of work. The development of the game allowed nursing work and adaptations to be explored, in a way that was engaging and thought-provoking. The tensions in the game, where there was no ideal response, prompted valuable insights from participants about how and why they adapt their work. The game was also effective in eliciting how nurses use cognitive labour to adapt their work. *Resilience Challenge* contributes to knowledge through the design of the game, its translation of ideas, and its use in eliciting reflections about nursing work.

7.3 Theoretical contributions to resilient healthcare

This section explores the findings as they relate to the CARE model, providing an overview of the theoretical contributions of this thesis. The main theoretical contribution of this research is to indicate how nurses manage the gap between work-as-imagined and work-as-done through adaptation. This thesis also identified that work-as-imagined originates from sources other than formal ideas of work. There were also important findings about whether an adaptation is right or wrong, and the contrast between patient-centred care and adherence to policies. These ideas are discussed in the following section.

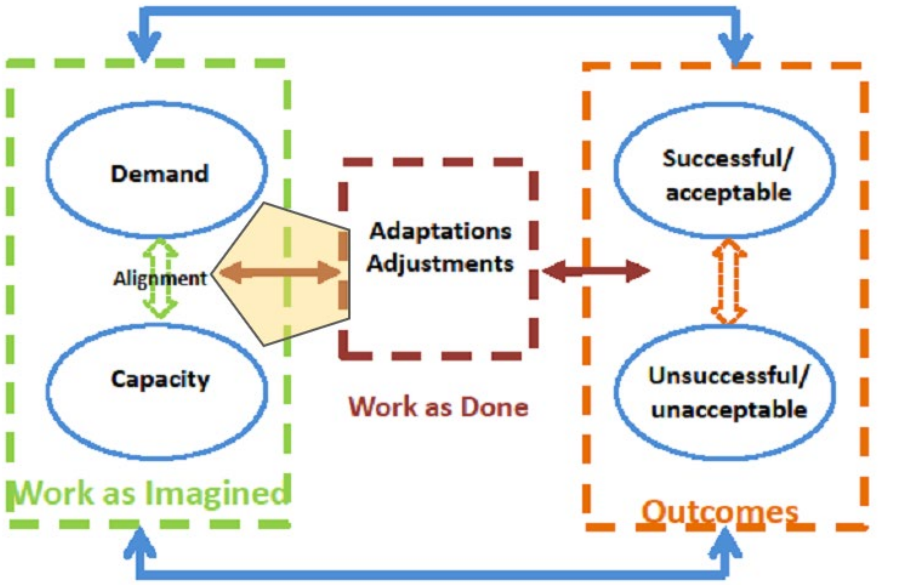
7.3.1. Development of the theory

The CARE model has been found to be a useful way to focus data collection and analysis on adaptive capacity in a variety of settings; in emergency departments (Anderson et al., 2019b, Back et al., 2017) and older persons' units (Anderson et al., 2016a). This thesis applied the concepts of

work-as-imagined and work-as-done to a video game that translated well for an acute care hospital setting. Through the interviews, these concepts were relatable for nurses in many settings, including inpatient and community mental health, district nursing, and learning disability community nursing. This suggests that the CARE model has captured universally applicable elements of work in nursing, and likely applies to many aspects of healthcare. Therefore, it is reasonable to suggest that the CARE model can be applied in varied settings for future research and quality improvement initiatives. Resilient healthcare has focused largely on emergency departments and other acute care settings (see Chapter 3). This thesis indicates that it is possible to apply resilience principles more broadly with productive results.

This thesis supports the main principles of the CARE model, and contributes detailed examples in nursing. This is especially true for the yellow shaded region in Figure 19, which highlights where the contribution of this thesis fit with the model. This thesis provides new insight into how and why nurses adapt their work, increasing the understanding of the process between work-as-imagined and work-as-done.

Figure 19: CARE Model with highlighted area of main contribution



It is well documented that there are considerable pressures in healthcare systems. Anderson et al. (2016a) identify adaptations as resulting from misalignments between demand and capacity. Back et al. (2017b) examined how work can be adapted in response to variable demands. The thesis affirms that increased demand or inadequate capacity require nurses to adapt their work. Anderson et al. (2019) highlight two ways to improve quality, using the CARE model: reduce misalignments between demand and capacity, and /or support adaptation to strengthen the path to good outcomes. This research adds more detail to the CARE model, emphasising the cognitive components of work, which could support safe adaptation. Adaptation was previously recognised as a response to complexity in nursing, but the issue needed to wait until there was a theoretical perspective that would assist in understanding adaptation as a central feature of nursing work. This thesis contributes an understanding that nurses adapt their work, as well as the 'why' and 'how' of these adaptations.

7.3.2. What is work-as-imagined?

In resilient healthcare, work-as-imagined has been defined as what should happen, under normal working conditions (Hollnagel et al., 2015). Work-as-imagined has been characterised as formal guidance on how to work, such as policies or procedures (Anderson et al., 2019b, Anderson et al., 2016b). This thesis demonstrates that this definition of work-as-imagined can be expanded as policies and procedures do not capture the full range of expectations of how work happens.

Participants in this thesis identified types of work-as-imagined that have not been previously reported as such. One type is external informal sources, including workplace norms. For participants, workplace norms dictated the unspoken standards of their work, creating a type of work-as-imagined. Workplace conditions have a documented impact on outcomes. In one study, nurses attributed their theory-practice gap to their workplace conditions (Maben et al., 2006). Similarly, Aiken et al. (2011b) have widely documented that nurses required a good work environment in order for nursing staffing to produce quality care and decreased mortality rates. The National Institute of Health Research (2019) also affirms that teamwork, leadership, and the local climate all impact patient experience and outcomes. When a healthcare environment was constrained, staff had to provide care in a context of "organisational sabotage" (Maben et al., 2006, p. 469). Workplace climate and working conditions are well documented as impacting on safety and outcomes, and can be considered as part of work-as-imagined.

Another type of work-as-imagined is nurses' internal standards and views of how to do nursing work. Nurses in this thesis reported that when they

could not meet their personal standards, they felt there were negative impacts for themselves and for patients. This finding is broadly supported by other research studies. When nurses felt unable to meet their personal standards, it was a source of considerable guilt and shame (Maben et al., 2006). Nurses' personal views of how they provide care are influential, and this aspect of work-as-imagined could be considered as part of future models.

Researchers and safety scientists can recognise that ideas of what should happen under normal conditions (Hollnagel, 2015) go beyond formal documentation of procedures. A contribution of this thesis is to identify that there are many factors like workplace norms and personal standards that add to work-as-imagined. For this reason, changing a healthcare policy may not result in clinical changes. Staff could identify which type of work-as-imagined is most influential in each practice (i.e. routines and norms on a ward) and focus on that area to influence work-as-done.

7.3.3. Difference between patient-centred care and adherence to organisational policy

It was known that work has to be adapted in a variety of contexts, including in response to misalignments between demand and capacity (Anderson et al., 2016a). This thesis confirms this finding, and surfaces the way nurses adapt their work. This thesis highlights the tension between following a policy to the letter, and providing individualised, person-centred care. Participants in this thesis reported that in some cases, they did not follow the available guidance because it was not appropriate for their patients. For patients that are homeless, non-English speakers, or facing other systemic barriers, they were not supported by standardised guidelines. The need for

individualised care is part of the NHS England (2019) Long Term Plan, which emphasises partnerships with patients and personalised care. There is extensive literature on patient-centred care, and the importance of patient preference and individualisation of treatment (Rathert et al., 2013). However, nurses are also expected to follow organisational policies. It is important to recognise that individualised care and following policies may not align. In response, policies can be designed to enable flexibility, where appropriate.

It is not generally recognised that nurses may deviate from a protocol to provide individualised patient care. A review of 16 studies found that nursing attitudes and organisational barriers were the main reasons for failure to implement practice guidelines (Jun et al., 2016). Only one study questioned the fitness of the guideline for clinical practice, citing the imperative to adapt to patients' needs. Rankin and Campbell (2006) highlight the increasing push towards standardised guidelines as problematic, given that patients have different needs. The fundamental assumption that illness is standardised, and thus, work can be prescribed, is at odds with the ethos of patient-centred care. What is perhaps more useful is to frame evidence and policies as guidelines, to be adapted to local context.

The tension between patient-centred care and adherence to protocols can be raised in healthcare settings. Participants identified tensions between the need to 'follow the rules' and adapt their care for unique patient needs. There are examples of cases where compliance is seen as a priority, over patient-centred care. The fear of reprisals because of errors can be used for social control in an organisation (Cook and Nemeth, 2010). For this reason, nurses may feel that they are not able to provide patient-centred care (Rankin and

Campbell, 2006). Organisations can engage in honest appraisals of their levels of patient centredness (Ree et al., 2019) to determine how to better support patients and provide safe care. Future research can also include patients, families, and other stakeholders in the research samples, to gain greater insight into the patient experience of this tension (Brett et al., 2014).

7.3.4. Right and wrong answers and the role of context

There are prevalent ideas in healthcare about the sources of errors, mainly that errors occur because staff do the wrong thing (Wears, 2015). It is assumed that if a root cause analysis is conducted, there will be a traceable path to the person responsible, who can be reprimanded (Cook and Nemeth, 2010). The idea that errors are a result of individual failure are refuted by the findings in this thesis. Participants from Phase 2 and Phase 3 were clearly divided into two groups: those who believed there were right and wrong answers to workplace dilemmas, and those who believed that good care was subjective with shades of grey in decision-making. Some participants who played *Resilience Challenge* were adamant that the game presented the 'wrong' answers, while other participants in the thesis reported that ideas of right and wrong depend heavily on context. The importance of context has been highlighted by other authors (Bate, 2014), supporting the idea that a best course of action depends on local factors.

In this thesis, in both the survey and interviews, some participants felt that the scenarios in the video game had clear right or wrong answers (and indeed, sometimes the 'right' answer in the game was not the best choice). Some nurses have reported adapting (or not adapting) their work for "avoiding trouble" (Vaismoradi et al., 2011, p. 995). These findings imply that nurses

consider actions right or wrong, at least to a point. The presence of moral distress amongst nurses (Morley et al., 2017) also suggests that nurses perceive right or wrong responses to a situation, with perceived 'wrong' decisions creating moral distress and negative outcomes for nurses.

In the interview portion of the thesis, the view that there are right and wrong ways to provide care was most pronounced amongst nursing students. These participants reported seeing examples of incorrect practice, particularly around psychomotor skills. These claims were supported by participants describing best practice (for example, from a National Institute for Health and Care Excellence guideline) and contrasting it with the actual practice they had observed. It is not entirely surprising that students responded this way, as Benner (1982) reported that novices have clear opinions on right and wrong actions, while experts espouse much more nuanced views. Stacey et al. (2015) found that students engage in performative practice with mentors, to avoid disrupting their relationship by highlighting incorrect practice. Students in this thesis also reported seeing practices they did not agree with, beyond psychomotor skills. There is potential that these views may be problematic if students have to reconcile their work in a challenging context (Maben et al., 2007, Morley et al., 2017). There is a tension between whether nurses' actions are definitively right or wrong, and what could be considered mitigating circumstances. These are difficult tensions to navigate in the context of nursing work.

In spite of these conflicting views, there were instances where participants agreed that care had been unacceptable. Nurses in this thesis expressed a considerable fear of reprisals for their work, specifically

referencing The Mid Staffordshire NHS Foundation Trust Public Inquiry. Francis (2013). In this inquiry, hospital staff were deemed responsible for substandard care that caused 400+ deaths, and placed patients in squalid conditions. This case has been universally deemed the 'wrong' care, which was supported by participants in this thesis. However, even this example presented nuance. Participants in this thesis reported being horrified by the findings of the Francis Inquiry, but their fear demonstrates an uncomfortable reality – that they could also be in a similar situation if their working environments broke down. Nurses have also reported "never again stories" (Wolf and Zuzelo, 2006, p. 1192), describing examples from their work where they experienced guilt, regret, and being haunted by experiences. They had strong convictions that they would never again act/not act similarly. This was echoed by von Arx et al. (2018) who reported that healthcare professionals experienced regret, which had a substantial impact on their work and personal lives.

The Mid Staffordshire Inquiry demonstrates an uncomfortable disparity between the nurses' emphasis on unsafe conditions, and family and patient emphasis on perceived incompetence. In investigations of difficult cases, organisations may find it easiest to fire employees involved, rather than address root causes of the issues (Cook and Nemeth, 2010). While nurses must be accountable for their work (Nursing & Midwifery Council, 2015), it is important to consider the role of working conditions and staffing (Aiken et al., 2011a, Aiken et al., 2002, Ausserhofer et al., 2014, Ball, 2012) in creating emergent outcomes. These examples affirm the findings in this thesis, that some healthcare professionals prioritise context, while others have a

dichotomous right-or-wrong view of work. This tension will likely continue to influence discussions of nurses' work, with mixed consequences.

It is also important to consider who makes the judgement of 'right or wrong'. While nurses may find an adaptation to be acceptable, a patient may not. There is recognition that healthcare professionals and patients may have different perceptions of what constitutes acceptable care and outcomes (Adams et al., 2018, Staley, 2009). It is well established that patients are crucial partners in health research and innovation (Hickey and Chambers, 2019, O'Shea et al., 2019, Sacristán et al., 2016). While it was beyond the scope of this study to include patients, future studies can compare patients' and nurses' perceptions of adaptations, to gain more insight into views of all actors in the system, and to understand patients' views, experiences and needs.

7.4 Theoretical contribution to nursing work

The models produced in this thesis on nurses' labour (Figure 9) and roles (Figure 18) each have different applications. Both the model of nurses' labour from the meta-narrative review (Chapter 2) and the model of nurses' roles from the thesis interviews (Chapter 6) are new contributions to nursing knowledge. The models complement each other, with the model of nursing roles explaining *what* nurses do, and the domains of labour illustrating *how* nurses do their work. These models are not contradictory. Rather, they have applications in different contexts. For example, the nursing labour model is useful for nursing students, to explain different aspects of their work. It also articulates the complexity of nursing work to people outside the profession.

The model of nurses' roles also contributes to discussions of nursing. Participants with more nursing experience reported that they do not see their

work as distinct domains of labour, because the domains blur together as they work. The findings of this thesis indicate that nurses are virtually always doing more than one type of labour, such as supporting a patient (emotional labour) while completing a procedure (physical labour). There may be instances where it is less useful to dissect aspects of nursing, and instead focus on the work as a whole. For this reason, a model of nurses' roles could be a valuable way of framing policy and workforce interventions. Nursing roles could also describe the nursing workforce in a given organisation or jurisdiction. The models support different understandings of the complexity of nursing work and may be useful in different contexts.

Both new models of nursing work make crucial contributions to the understanding of what nurses do. Firstly, they provide a way to present nursing beyond a description of tasks. Secondly, these models allow for an interpretation of adaptation, as a constant and flexible part of nurses' work. Thirdly, these models highlight that nursing work is more than patient care. Each of these contributions has the potential to create a substantial shift in the way nursing is regulated, taught, and supported. These models of nursing work are discussed further in the following section.

7.4.1. Nurses' labour and roles

Original contributions to knowledge from this thesis are two new models of nursing work: (1) a composite model of nursing labour (Figure 9), and (2) a conceptualisation of roles in nursing work (Figure 18). From the meta-narrative review, nursing work was understood as labour (Figure 9), consisting of four domains: physical, emotional, cognitive, and organisational. The

model of nursing labour included an augmented understanding of cognitive labour, which had not been addressed prior to this thesis.

While these domains of labour have been studied separately, this is the first time they have been brought together to create a broader model of nursing work. This model contributes an understanding of nursing work that captures different elements of labour, rather than defining nursing as a series of tasks. Using domains of labour as a model also illustrates aspects of nursing work that are not immediately visible (such as a nurses' thoughts), and are more difficult to recognise. This model provides a taxonomy that enables a robust discussion of nursing work, giving different aspects of nurses' labour equal importance. A model of labour foregrounds elements of nursing work that have historically been overlooked.

There have been various other ways of modelling nurses' work. Bottorff and Morse (1994) created a model of nurses' work, but emphasised what nurses did, leading to a partial task focus. Other authors focused more broadly, including James (1992), whose model comes the closest to that proposed in this thesis. The formalisation of organisational labour (Allen, 2014) enabled a hidden aspect of nurses' work to be included in the model of nursing labour. This thesis adds cognitive labour as a dimension of nurses' work, which widens the understanding of work. The concept of cognitive labour is discussed further below.

7.4.1.1 Cognitive labour

The creation of the concept of cognitive labour is an original contribution of this thesis. Physical, emotional, and organisational labour have been described separately in previous research. In this thesis, cognitive labour

was consolidated as a comparable concept by drawing on previous scholarship, including work from cognitive stacking (Potter et al., 2005b), developmental knowledge acquisition (Benner, 1982), and the application of judgement through critical thinking (Kataoka-Yahiro and Saylor, 1994). The findings of this thesis bring different aspects of cognitive labour together, creating a more robust concept that can be evaluated alongside other types of labour. This does not diminish individual contributions to cognitive labour, like Novice to Expert theory (Benner, 1982), but rather integrates ideas into a broader, over-arching concept that serves to illustrate how mentally taxing nursing work is. The creation of cognitive labour as a distinct concept enables a discussion of how cognitive labour leads to nurses' adaptations of their work.

Given the frequent attacks on the need for university education in nursing (Chapman and Martin, 2013, Gillett, 2012), it is the right time to consolidate aspects of cognitive labour and present a new, comprehensive concept of nursing work that accurately depicts the expertise required of nurses. Cognitive labour is important because it can strengthen the arguments for nurses being well educated (Aranda and Brown, 2006, Gillett, 2012). Subsequently, the idea that nurses can be replaced with Nursing Associates (Department of Health and Social Care, 2017), or similar roles with less education, should be refuted based on the substantial evidence illustrating the importance of cognitive labour among nurses.

7.4.1.2 Nurses' roles

The domains of nursing labour were reported by participants in this thesis, confirming the findings of the meta-narrative review in Chapter 2.

However, the way that participants understood their work was by its role as either enabling work, managing work, or clinical work. Crucially, there is overlap between the models, as cognitive labour (or judgement) is the main driver of adaptations in nursing work. The use of interpretive description as a guiding methodology supported theorising about nursing work while including the experiences of individual participants (Thorne, 2008). Participants used these roles as a frame for a cohesive vision of the nursing profession, which included roles that are not patient facing. These roles were illustrated in Figure 18.

A model of nursing roles makes an important contribution to nursing by validating that *not all nursing work is patient care.* The model in ~Figure 18 illustrates how enabling work and managing work both support clinical work in different ways. For example, enabling work ensured there are qualified nurses available to work in clinical settings, and managing work ensured that those nurses are hired and orientated. In turn, nurses work clinically because of the scaffold of support for their work. This model is important because it provides a comprehensive view of nursing roles, including those which participants indicated were 'not real nursing' due to an absence of patient care.

A model of nursing roles may be more useful for workforce policy development than models that focus on tasks or patient allocation, as it aligns with how nurses themselves understand their work. New models of nursing are much needed to address workforce challenges (Carryer, 2020, Clarke, 2011), and the findings in this thesis may provide a modern alternative to the status quo.

Nursing roles are also significant because of their meaning for nurses. In this thesis, nurses reported that they adapt their work constantly, a reality which is at odds with models of nursing that focus on competencies or tasks. However, when nurses frame their work as fulfilling a role, the actions or tasks they complete are secondary to their overall aims. These pieces fit together, as a role means nurses are not restricted to working to a list of tasks and thus, can adapt their work as needed. Adaptation is discussed further in the following section.

7.4.2. Adaptation in nursing work

A model of nurses' roles creates a frame for understanding nurses' adaptations of their work. Nurses do whatever is required to achieve the objectives of their role, whether it aligns with their written job description or not. This thesis contributes an understanding of adaptation in nursing, and how this is a critical, unrecognised part of nurses' work. Nurses report that they adapt constantly, on a variety of levels, and for numerous reasons. Adaptation constitutes a large, hidden aspect of nurses' daily work.

Previous authors did not capture adaptation in nurses' work, as there were inadequate theoretical lenses to interpret and understand this work. Bringing resilient healthcare concepts together with the roles of nurses has created a new way of interpreting what nurses do in a complex adaptive system. Adaptation is a major part of nurses' work, and needs to be recognised as such to adequately assess workload. This hidden aspect of nurses' work is not recognised as work by nurses themselves, and thus, adaptation is not articulated as part of nurses' work in broader conversations. Much like emotional labour (Smith, 1992) or organisational labour (Allen, 2014),

adaptation of nursing work is expected, but is not recognised, taught, or supported. The findings in this thesis illustrate how and why nurses adapt, making a major contribution to an understanding of what nurses do.

7.4.3. Complexity

This thesis also revealed the complexity of nursing work in a new way. The findings demonstrate that the context of nursing work is a complex adaptive system, supporting previous findings from other authors (Burger et al., 2010, Debono et al., 2013, Ebright et al., 2003). The resilient healthcare lens helped to model nursing work by exposing how nurses adapt care and manage the tensions between work-as-imagined and work-as-done. Resilient healthcare theory made it possible to study nursing adaptation, as it framed nursing work as inherently complex, rather than viewing complexity as a consequence. Future studies of nursing work could benefit from framing nurses' work as inherently complex, to avoid diminishing the work of nurses.

The complex nature of nursing work also creates the potential for future research examining resilient healthcare in nursing. As the scoping review in Chapter 3 found, there is a lack of research on resilience and nursing in safety science literature. This thesis details how nursing work occurs in a complex adaptive system, affirming the relevance of resilient healthcare for nursing.

7.4.4. Different levels of adaptation

Additionally, nurses reported different scales for their roles, and subsequently their adaptations. Nurses in this thesis reported that they adapted their work, on a clinical level to a system level. This is similar to the findings of Macrae and Wiig (2019), who identified resilience as being situated (clinical), structural (organisational), and systemic. This thesis supports these

findings and indicates that adaptation occurs over different scales and timeframes. Adaptation is not restricted to clinical work. Rather, it occurs in various forms across all nursing roles. There is a lack of recognition for adaptation in nursing, especially in managerial and enabling work roles. There are consequences for nurses who are working in these roles, whose adaptations are not acknowledged in workload measurement or similar.

It may be possible to support safe adaptation through the recognition that adaptation occurs at different levels, which may require differing degrees of support. Acknowledging adaptation as a part of any nursing role creates opportunities to support this adaptation. There is also the potential for enhancing safe adaptation by applying resilient healthcare, human factors, and other safety lenses to nursing work. All of these findings are contextualised by the strengths and limitations of the methods of this thesis, which are presented below.

7.5 Strengths of this thesis

A strength of this research is the connection between theory and practice that was enabled by creating a serious video game. Creating a video game as a public engagement tool for resilient healthcare is among the first evidence-based knowledge translation efforts in the area. The extensive piloting and evaluation of the video game ensured that it was rigorous before it was used in interviews. Iterative design principles were used as the game was created. The video game represents a successful interdisciplinary, international collaboration. *Resilience Challenge* brings theory and practice together in a way that is rigorous and innovative.

This thesis focused on nurses, who have been comparatively neglected by other resilient healthcare researchers. Nurses form the largest portion of the healthcare workforce (NHS Digital, 2019) and need to be included in studies on resilient healthcare and safety in systems. Other researchers could support high quality healthcare by a broader inclusion of nurses in research samples.

This thesis allowed the researcher to connect with participant experiences in a new way. Technology was embedded throughout the thesis, in addition to the use of the video game. Phases 2 and 3 of the thesis recruited participants through Twitter, to great effect. Using Skype interviews as a complement to in-person interviews allowed participants across the UK to engage with this research. The ability to access the video game freely online meant that the combination of Skype and *Resilience Challenge* facilitated interviews in northern Scotland that followed the same process as those in London. The technology used in this research increased the reach of the project, while being accessible and cost effective.

7.6 Limitations of this thesis

There are several limitations in this thesis, relating to the process of the research. The video game *Resilience Challenge* was created during this study, to operationalise concepts from resilient healthcare and explore nurses' work. The implementation of the video game occurred with a relatively small interview sample of nurses. *Resilience Challenge* would benefit from further testing, development, and refining with larger and more diverse samples of participants. Additional research is needed to establish the effectiveness of both *Resilience Challenge* and serious games in healthcare to share concepts with nurses and elicit reflections. This exploratory study presents early

evidence about *Resilience Challenge,* and the video game can be studied further in future studies.

The participant samples in this study were self-selected and small so there is potential for bias in the participant responses. The survey used to evaluate *Resilience Challenge* was a new tool, created for this study. It was not possible to evaluate the reliability of this survey, as the survey was only used at one time point. Efforts were made to assess face validity of the survey; however, this may have been insufficient to ensure validity. The sample for the survey was a convenience, purposive sample, which included nurses, non-nursing healthcare professionals, and members of the public. These limitations indicate that the outcomes of the survey should be applied with caution.

Diversity in the sample of participants interviewed was another limitation. There was minimal demographic data collected about the sample through the video game survey. The participants for the interviews were largely Masters' prepared, white British women. This may be due to the nature of Twitter and its use as a participant recruitment tool. Given that 20% of NHS staff (NHS Digital, 2019), and nearly 50% in London (Royal College of Nursing London, 2015) self-identify as black and ethnic minority people, this sample cannot be considered representative. This could be because of who is represented in UK Twitter accounts. There is also the possibility that the use of convenience sampling may have produced a non-representative sample whether Twitter was used or not. Additional public involvement in this study may have increased the diversity of the study participants (Crocker et al., 2018). The findings of this thesis therefore need to be interpreted with caution because of the sampling method and participants.

In the data collection in Phase 3, there was a lack of concurrent data collection and analysis. This technique is a preferred approach for data collection in interpretive description (Thorne, 2008). There was a decision to prioritise collecting data over concurrent data collection and analysis during a time of ill health, to increase the speed of data collection. This period was not without reflection, as there were summaries written after each interview. Interview questions were also adapted in response to ideas from other interviews. These efforts offset the impact of this limitation.

The focus of this study was on nurses' experiences and perceptions of their work. Patients and the public also have views about this which could be explored in further work and would be crucial for understanding nurses' adaptations and the effect on patients. Patient and Public Involvement is important for identifying relevant outcomes for research studies (Staley, 2009). However, this study was the first to examine nurse adaptation and so it was important to understand nurses' views prior to engaging with a wider group of participants, including patients. It was beyond the scope of this study to include patient and public involvement (Brett et al., 2014). Engaging patients and the public around adaptation in healthcare could be a next step in this research programme.

7.7 Implications of this thesis

This thesis surfaced different aspects of nursing work that have been hidden, namely nurses' roles and adaptations. Subsequently, there are implications for future development of nursing work. Recommendations for clinical practice, policy and administration, education, and research are presented in the following sections.

7.7.1. Clinical work

This thesis presents new ways of understanding nursing work. The two models of nursing work that were created in this thesis have utility in different contexts. The model of nursing work as domains of labour reflects the work of previous researchers, and may be useful in teaching nurses and articulating what nursing work is to non-nursing audiences. The model of nurses' roles are how nurses themselves understand their work. This model has utility in workforce planning, and uniting nurses across different settings according to the purpose of their work. These models essentially present what nursing work is (roles) and how it is done (labour). These conceptualisations of nursing illustrate how nurses undertake considerable managing work and enabling work in the healthcare system. Working with nursing students, performing ward duties, supporting staffing and so forth all need to be included in workload measurement, and valued as contributions.

Nurses would benefit from support to adapt their work safely. This support could begin with recognising that adaptation is a central practice of nursing work, in the context of complex adaptive systems. A strict adherence to policies and patient-centred care are contradictory expectations. For care to be patient-centred, it requires adaptation from a standardised model. The reality of healthcare delivery is that many patients are marginalised because of social factors. When creating policies for clinical practice, organisations can move toward flexible models of care that promote individualised care and nurse autonomy, rather than strict adherence to protocols. This will ensure patients receive care that meets their individual needs.

Nurses in this thesis described adapting care as empowering. Fostering adaptation could support nurse satisfaction, workforce retention, and better patient care. Nurses report disillusionment when they feel they are micromanaged, or lacking support (Maben et al., 2007). Adequate supports for adapting care and exercising autonomy may foster greater empowerment amongst nurses doing clinical work.

7.7.2. Policy and administration

This thesis raises several implications for healthcare policy and administration. Nursing work is broader than tasks, and needs to be framed and supported in this way. Nursing work is funded based on patient census, acuity, or both. However, these methods of allocation assume a standard amount of work per patient, based on diagnosis (Nelson and Gordon, 2006). In this thesis, nurses reported that their patients are infinitely complex and that providing patient-centred care requires adaptation that is demanding cognitively, emotionally and in terms of resources. Nurse leaders can advocate for appropriate workload measurement that includes different domains of labour, and the need to adapt work, rather than a standardisation of patients. This could support adequate staff and resource allocation to provide care.

It is also important to consider the role of unions and workforce management in the context of nurses' work. Nursing contributions like cognitive labour and adaptation are largely invisible and unrecognised, even by nurses themselves. Unions and professional organisations can be vocal about these types of work, and represent the complexity of nursing during contract negotiations and similar. A different image could be an impactful tool

to advance nurses' professionalisation and change dated attitudes towards nursing (Yam, 2004).

7.7.3. Education

This thesis presents a model to frame nursing during education. Students in this thesis had a sense that what they were taught was 'right' and other ways of doing things were 'wrong'. A more useful frame for education may be teaching based on the best evidence available, with the understanding it may require adaptation. For example, the illustration of work-as-imagined and work-as-done may provide students with a useful lens to understand how their work will need to be adapted, rather than perpetuating right and wrong ideas of care. Students can also be taught when and why they may need to adapt their work, and how to do this safely. This approach reinforces the autonomy of nurses in applying judgement, rather than following rules.

The models developed in this thesis may also contribute to nursing education by making hidden aspects of nursing work visible in new ways. Many researchers have found that nurses experience difficult transitions to working independently (Duchscher, 2009, Maben et al., 2006, Maben et al., 2007), and organisations report that nurses are unprepared for work when they complete their programmes (Nelson and Gordon, 2006). This may be because aspects of nursing work like adaptation have not been previously revealed as central activities of nursing. If students are aware that adaptation is part of their role, there is potential to improve both their readiness and experience of transitioning to independent work.

There are also opportunities to support adaptation through continuing education/professional development. Participants in this thesis reported great

benefit in having protected time for education and professional development. However, they also reported that clinical work takes priority over professional development. There can be professional supports put in place, such as protected time and funding. These supports give nurses space to reflect on their work, and develop innovations to improve patient care.

There are educational opportunities to use *Resilience Challenge* with healthcare professionals and students. This study found that *Resilience Challenge* was an effective way to elicit nurses' perceptions of their work. These perceptions would be valuable in facilitated discussions about safety and adaptation in healthcare. Increased awareness of adaptation may better prepare nurses and other healthcare professionals to adapt safely, and subsequently, decrease errors.

7.7.4. Future research

In resilient healthcare, this thesis makes a significant contribution to the CARE model by demonstrating how and why adaptations are made and increasing understanding of nursing work. Further development of the CARE model could explore what factors contribute to adaptations being successful or unsuccessful. This could give the model a measure of predictive validity. Other areas of development for resilient healthcare include investigating what resilience looks like in varied settings. This thesis explored resilient healthcare in community, mental health, and learning disabilities settings. Other researchers are encouraged to build on specific concepts and develop the potential of resilient healthcare in different settings with broader populations. There is also the opportunity to explore work-as-imagined in more detail, as the findings of this thesis illustrate that work-as-imagined goes beyond written

policies. A more robust understanding of work-as-imagined may help researchers better investigate work-as-done, and the gap between the two concepts. It is also recommended that future researchers contextualise nursing in a complex adaptive system. This starting point presents nursing as inherently complex, and could avoid reductionistic assessments of nurses' work.

The *Resilience Challenge* serious game demonstrated efficacy of promoting nursing reflections on work in this thesis. The creation of *Resilience Challenge* was an exploratory effort to relate theoretical concepts to healthcare examples, to engage with nurses. Future researchers could expand the game, and assess whether allowing multiple pathways through the game influences participant views. The game could also be expanded to include more scenarios, different professionals, and settings outside a hospital. There is also scope to assess the role of serious games for nursing more broadly, and the utility of this technology in engaging with healthcare professionals and translating ideas. Larger studies with more diverse samples could develop *Resilience Challenge* further, and further its use as an educational or elicitation tool. The involvement of stakeholders such as patients, families, and other healthcare professionals would strengthen future iterations of the video game.

A further question about the use of the CARE model, and resilient healthcare more broadly is how work is completed, in terms of its spirit of implementation. Nurses are regarded for their caring and compassionate work, which is recognised through studies of emotional labour (Smith, 2012). The CARE model does not address caring, or any other spirit of implementation in work. The perceived absence of caring is problematic in nursing (Corbin,

2008, Maben, 2008). Future studies using the CARE model could explore additional aspects of work such as caring, and understand how caring relates to adaptation.

Researchers are also encouraged to consider social factors and resilient healthcare. Evidence suggests that part of the reason that the error rate in healthcare has not improved is due to a lack of understanding of social dynamics. Researchers could recruit diverse samples to obtain a richer understanding of the issues around work and safety. The findings of this thesis indicate that work is often adapted because patient needs are outside of what is prescribed in policies. Marginalised patients require substantial adaptations of work, and the safety science community may benefit from including these populations in research.

This thesis has produced new models of nursing. These models could be assessed with international samples of nurses, and with methods such as observation of work. There is also the potential to apply the models more directly to nursing work. For example, the nursing labour model may have applications for teaching student nurses about hidden aspects of the profession. The model of nursing roles could inform workforce structures and reporting. Each of these examples could be explored further with future research. Both models could provide language to explain nursing work. Researchers could assess whether these presentations of nursing work influence the image of nurses in healthcare, and in society.

Additionally, this thesis reveals adaptation as a hidden aspect of nursing work. Adaptation can be studied to understand how to support and teach safe adaptation. Methods like observation could illustrate how nurses adapt their

work in real time, and assess the magnitude of adaptation as part of nursing workload. There could also be interventions to develop policies that facilitate adaptation and reduce the cognitive burden adaptation creates for nurses. The findings of this thesis present many areas for future research, which could develop the understanding of adaptation, resilient healthcare, and nursing work.

A logical next step following this study is to involve patients in this research, to understand the impact of nurses' work and adaptation. Future studies can involve patients to identify priority outcomes (Staley, 2009), and sample larger, more diverse groups (Brett et al., 2014). Researchers can contrast nurses' and patients' perceptions of work to better understand how to support nurses to optimise patient centredness in healthcare.

7.8 Conclusion

This thesis has explored the nature of nursing work, and how this work can be adapted. Through surveys and interviews, participants emphasised the cognitive labour that drives adaptations. Participants also explained how this work is responsive to system pressures, patient requests, and nurses' preferences. The outcomes of nursing work are varied, for patients and nurses themselves. This section presents a closing synthesis of this thesis, and paths forward to support nursing work.

There are differences between how nursing work has been researched, and how nurses themselves understand their work. Researchers have explored nursing work as domains of labour, which were identified through a narrative review. These domains of labour were recognised by nurse researchers: physical, emotional, cognitive, and organisational labour. Each of these

domains has been explored in depth, and this thesis adds to knowledge by synthesising these concepts into a comprehensive model of nursing labour. This model has utility for teaching nurses, supporting work allocation in clinical settings, and highlighting nursing contributions to healthcare. Nurses understand their work by its role in healthcare delivery: clinical work, managing work, and enabling work. This model is useful for explaining nursing roles across a whole profession, and recognising where nurses' contributions add value to patient care.

These two models are different, but not contradictory. It is possible to view nursing work as both labour and as different roles, as each emphasis is useful in different contexts. It is hoped that these models will give nurse leaders language to explain the work of the profession, especially to policy makers who may not be familiar with clinical environments. Previous studies found it difficult to account for complexity in nursing work. Emphasising safe adaptation, in the context of either model produced in this study, may support policy development for safe nursing work-as-done. This is needed, because both the meta-narrative review and the findings of this thesis illustrate that there is no set of activities that define nursing. Nursing work was and is driven by what is socially acceptable, needed, and deemed appropriate for nurses to do. This reality presents an opportunity for the profession. If there is an empowered approach to nursing work, nurses may shape what their work is, relative to other healthcare professionals. Otherwise, there is a risk of nursing work being dictated by others, or consisting largely of tasks others will not do. The original models presented in this thesis may provide a frame to discuss

nursing work in a way that transcends settings, and recognises the modern demands on nurses, that extend beyond patient care.

The video game *Resilience Challenge* translates resilient healthcare theory to engage with healthcare professionals through a digital tool. This interdisciplinary, international collaboration drew upon safety science, nursing work, and game theory to create an engaging digital experience. The game asks players to consider difficult situations, where there is no ideal answer. These situations draw on the ideas of work-as-done, requiring participants to make decisions in sub-optimal situations.

Overall, nursing work is complex and requires continuous adaptation. Nurses' work can be understood through the CARE model (Figure 19), domains of labour (Figure 9), and nurses' roles (Figure 18). Each of these lenses has utility in different contexts. By appreciating the complexity of nursing work, nurses can be supported to provide safe, high quality healthcare.

8 References

ABBASI, M., ZAKERIAN, A., KOLAHDOUZI, M., MEHRI, A., AKBARZADEH, A. & EBRAHIMI, M. H. 2016. Relationship between work ability index and cognitive failure among nurses. *Electron Physician,* 8**,** 2136-43.

ADAMS, A., LUGSDEN, E., CHASE, J., ARBER, S. & BOND, S. 2000. Skill-mix changes and work intensification in nursing. *Work, Employment and Society,* 14**,** 541-555.

ADAMS, M., MABEN, J. & ROBERT, G. 2018. 'It's sometimes hard to tell what patients are playing at': How healthcare professionals make sense of why patients and families complain about care. *Health,* 22**,** 603-623.

ADAMS, V. & SHARP, R. 2013. Reciprocity in caring labor: Nurses' work in residential aged care in australia. *Feminist Economics,* 19**,** 100-121.

AESCHBACHER, R. & ADDOR, V. 2018. Institutional effects on nurses' working conditions: A multi-group comparison of public and private non-profit and for-profit healthcare employers in switzerland. *Hum Resour Health,* 16**,** 58-68.

AFOLABI, O., ABBOAH-OFFEI, M., NKHOMA, K. & EVANS, C. 2019. Task-shifting must recognise the professional role of nurses. *The Lancet Global Health,* 7**,** e1328-e1329.

AIKEN, L. H., CIMIOTTI, J. P., SLOANE, D. M., SMITH, H. L., FLYNN, L. & NEFF, D. F. 2011a. Effects of nurse staffing and nurse education on patient deaths in hospitals with different nurse work environments. *Med Care,* 49**,** 1047-53.

AIKEN, L. H., CLARKE, S. P., SLOANE, D. M., SOCHALSKI, J. & SILBER, J. H. 2002. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA,* 288**,** 1987-1993.

AIKEN, L. H., SLOANE, D. M., CLARKE, S., POGHOSYAN, L., CHO, E., YOU, L., FINLAYSON, M., KANAI-PAK, M. & AUNGSUROCH, Y. 2011b. Importance of work environments on hospital outcomes in nine countries. *International Journal for Quality in Health Care,* 23**,** 357-364.

AL MAQBALI, M. A. 2015. Factors that influence nurses' job satisfaction: A literature review. *Nurs Manag,* 22**,** 30-37.

ALLEN, D. 2014. *The invisible work of nurses: Hospitals, organisation and healthcare,* London, Routledge.

AMERICAN ASSOCIATION OF COLLEGES OF NURSING 2011. Nursing fact sheet. Retrieved from: Http://www.Aacn.Nche.Edu/media-relations/fact-sheets/nursing-fact-sheet.

ANANDACIVA, S., JABBAL, J., MAGUIRE, D., WARD, D. & GILBURT, H. 2018. How is the nhs performing? December 2018 quarterly monitoring report. London: The King's Fund.

ANDERSON, J. E., ROSS, A., BACK, J., DUNCAN, M., HOPPER, A., SNELL, P. & JAYE, P. 2019a. Resilience engineering for quality improvement. *In:* HOLLNAGEL, E., BRAITHWAITE, J. & WEARS, R. (eds.) *Delivering resilient health care* London: Taylor & Francis.

ANDERSON, J. E., ROSS, A., BACK, J., DUNCAN, M. & JAYE, P. 2019b. Resilience engineering as a quality improvement method in healthcare. *Exploring resilience* Springer.

ANDERSON, J. E., ROSS, A. & JAYE, P. 2017. Modelling resilience and researching the gap between work-as-imagined and work-as-done. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

ANDERSON, J. E., ROSS, A. J., BACK, J., DUNCAN, M., SNELL, P., WALSH, K. & JAYE, P. 2016a. Implementing resilience engineering for healthcare quality improvement using the care model: A feasibility study protocol. *Pilot Feasibility Stud,* 2**,** 61-70.

ANDERSON, J. E., ROSS, A. J. & JAYE, P. 2016b. Modelling resilience and researching the gap between work-as-imagined and work-as-done. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilience health care volume 3: Reconciling work-as-imagined and work-as-done.* Farnham, UK: Ashgate.

ARANDA, S. & BROWN, R. 2006. Nurses must be clever to care. *In:* NELSON, S. & GORDON, S. (eds.) *The complexities of care: Nursing reconsidered.* London: ILR Press.

ARCHIBALD, M. M. & CLARK, A. M. 2014. Twitter and nursing research: How diffusion of innovation theory can help uptake. *J Adv Nurs,* 70**,** 3-5.

ARISTE, R., BEJAOUI, A. & DAUPHIN, A. 2019. Critical analysis of nurses' labour market effectiveness in canada: The hidden aspects of the shortage. *Int J Health Plann Manage,* 34**,** 1144-1154.

ARKSEY, H. & O'MALLEY, L. 2005. Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology,* 8**,** 19-32.

AUBIN, D., KING, S., BOECHLER, P., BURDEN, M., ROCKWELL, G., HENRY, M. & GOUGLAS, S. 2012. Serious games for patient safety education. *Med Teach,* 34**,** 675-675.

AUSSERHOFER, D., ZANDER, B., BUSSE, R., SCHUBERT, M., DE GEEST, S., RAFFERTY, A. M., BALL, J., SCOTT, A., KINNUNEN, J., HEINEN, M., SJETNE, I. S., MORENO-CASBAS, T., KOZKA, M., LINDQVIST, R., DIOMIDOUS, M., BRUYNEEL, L., SERMEUS, W., AIKEN, L. H., SCHWENDIMANN, R. & CONSORTIUM, R. C. 2014. Prevalence, patterns and predictors of nursing care left undone in european hospitals: Results from the multicountry cross-sectional rn4cast study. *BMJ Qual Saf,* 23**,** 126-135.

AVEYARD, H., PAYNE, S. A. & PRESTON, N. J. 2016. *A post-graduate's guide to doing a literature review in health and social care*, Oxford University Press.

BACK, J., FURNISS, D., HILDEBRANDT, M. & BLANDFORD, A. 2008. Resilience markers for safer systems and organisations. *In:* HARRISON, M. D. & SUJAN, M.-A. (eds.) *Computer safety, reliability, and security.* Berlin, Heidelberg: Springer Berlin Heidelberg.

BACK, J., ROSS, A. J., DUNCAN, M. D., JAYE, P., HENDERSON, K. & ANDERSON, J. E. 2017. Emergency department escalation in theory

and practice: A mixed-methods study using a model of organizational resilience. *Ann Intern Med,* 70**,** 659-671.

BALL, J., PIKE, G., GRIFFITHS, P., RAFFERTY, A. M., MURRELLS, T. 2012. Rn4cast nurse survey in england. London: National Nursing Research Unit.

BALL, J. E., MURRELLS, T., RAFFERTY, A. M., MORROW, E. & GRIFFITHS, P. 2014. 'Care left undone' during nursing shifts: Associations with workload and perceived quality of care. *BMJ Qual Saf,* 23**,** 116-125.

BAMFORD, D. & HALL, C. 2007. A case study into labour turnover within an nhs trust. *Health Serv Manage Res,* 20**,** 9-21.

BARTRAM, T., CASIMIR, G., DJURKOVIC, N., LEGGAT, S. G. & STANTON, P. 2012. Do perceived high performance work systems influence the relationship between emotional labour, burnout and intention to leave? A study of australian nurses. *J Adv Nurs,* 68**,** 1567-1578.

BATE, P. 2014. Context is everything. *Perspectives on context.* London: Health Foundation.

BATTISTO, D., PAK, R., VANDER WOOD, M. A. & PILCHER, J. J. 2009. Using a task analysis to describe nursing work in acute care patient environments. *Journal of Nursing Administration,* 39**,** 537-547.

BEECH, J., BOTTERY, S., CHARLESWORTH, A., EVANS, H., GERSHLICK, B. & HEMMINGS, N. 2019. Closing the gap: Key areas for action on the health and care workforce. Research report: Nuffield Trust.

BENNER, P. 1982. From novice to expert. *Am J Nurs,* 82**,** 402-407.

BERTERÖ, C. 2015. Developing qualitative methods-or “same old wine in a new bottle”. *International Journal of Qualitative Studies on Health and Well-being,* 10**,** 1-2.

BISHOP, S. E. 2007. *Doing taboo work: Nurses' experiences of caring for women having second trimester pregnancy terminations for fetal anomalies through labour induction.* Ph.D., McMaster University (Canada).

BITTNER, N. P. & GRAVLIN, G. 2009. Critical thinking, delegation, and missed care in nursing practice. *J Nurs Adm,* 39**,** 142-6.

BLUMER, H. 1954. What is wrong with social theory? *American Sociological Review,* 19**,** 3-10.

BOGOSSIAN, F., WINTERS-CHANG, P. & TUCKETT, A. 2014. "The pure hard slog that nursing is . . .": A qualitative analysis of nursing work. *J Nurs Scholarsh,* 46**,** 377-88.

BOLTON, S. C. 2000. Who cares? Offering emotion work as a 'gift' in the nursing labour process. *J Adv Nurs,* 32**,** 580-6.

BOLTON, S. C. 2005. Women's work, dirty work: The gynaecology nurse as ‘other’. *Gender, Work and Organization,* 12**,** 169-186.

BOTTORFF, J. L. & MORSE, J. M. 1994. Identifying types of attending: Patterns of nurses' work. *Image J Nurs Sch,* 26**,** 53-60.

BRADLEY, C. 1999. Doing more with less in nursing work: A review of the literature. *Contemp Nurse,* 8**,** 57-64.

BRAITHWAITE, J., CLAY-WILLIAMS, R., HUNTE, G. S. & WEARS, R. 2017a. Understanding resilient clinical practices in emergency

department ecosystems. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

BRAITHWAITE, J., CLAY-WILLIAMS, R., NUGUS, P. & PLUMB, J. 2013. Health care as a complex adaptive system. *In:* HOLLNAGEL, E., BRAITHWAITE, J. & WEARS, R. (eds.) *Resilient health care.* Farnham, Surrey: Ashgate.

BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. 2017b. *Resilient health care. Reconciling work-as-imagined and work-as-done,* London, Taylor & Francis.

BRENNAN, D. 2005. Commentary. The social construction of 'woman's work': Nursing labour and status. *J Nurs Manag,* 13**,** 282-285.

BRETT, J., STANISZEWSKA, S., MOCKFORD, C., HERRON-MARX, S., HUGHES, J., TYSALL, C. & SULEMAN, R. 2014. A systematic review of the impact of patient and public involvement on service users, researchers and communities. *The Patient-Patient-Centered Outcomes Research,* 7**,** 387-395.

BRIDGES, J., NICHOLSON, C., MABEN, J., POPE, C., FLATLEY, M., WILKINSON, C., MEYER, J. & TZIGGILI, M. 2013. Capacity for care: Meta-ethnography of acute care nurses' experiences of the nurse-patient relationship. *J Adv Nurs,* 69**,** 760-72.

BRIGHTON, L. J., SELMAN, L. E., BRISTOWE, K., KOFFMAN, J. & EVANS, C. J. 2018. Emotional labour in palliative and end-of-life care communication: A qualitative study with generalist palliative care providers. *Palliat Med,* 32**,** 272.

BROOM, A. & WILLIS, E. 2007. Competing paradigms and health research. *In:* SAKS, M. & ALLSOP, J. (eds.) *Researching health : Qualitative, quantitative and mixed methods.* London: Sage.

BROTHERIDGE, C. M. & LEE, R. T. 2003. Development and validation of the emotional labour scale. *Journal of Occupational and Organizational Psychology,* 76**,** 365-379.

BRUMIT, E. M. & GLENN, L. L. 2013. Accuracy of the spanish emotional labour scale. *Nurse Educ Today,* 33**,** 1448.

BURGER, J. L., PARKER, K., CASON, L., HAUCK, S., KAETZEL, D., O'NAN, C. & WHITE, A. 2010. Responses to work complexity: The novice to expert effect. *West J Nurs Res,* 32**,** 497-510.

CANADIAN INSTITUTE FOR HEALTH INFORMATION 2017. Regulated nurses: Canada and jurisdictional highlights.

CAPRI, C. & BUCKLE, C. 2015. 'We have to be satisfied with the scraps': South african nurses' experiences of care on adult psychiatric intellectual disability inpatient wards. *J Appl Res Intellect Disabil,* 28**,** 167-81.

CARNEVALE, F. A. 2016. Authentic qualitative research and the quest for methodological rigour. *Can J Nurs Res,* 34**,** 121-128.

CAROE, T. K., EBBEHOJ, N. E., BONDE, J. P. E., FLACHS, E. M. & AGNER, T. 2018. Hand eczema and wet work: Dose-response relationship and effect of leaving the profession. *Contact Dermatitis,* 78**,** 341-347.

CAROLAN, M. 2003. Reflexivity: A personal journey during data collection. *Nurse Res,* 10**,** 7-14.

CARPER, B. 1978. Fundamental patterns of knowing in nursing. *Adv Nurs Sci,* 1**,** 13-23.

CARRYER, J. 2020. Letting go of our past to claim our future. *J Clin Nurs,* 29**,** 287-289.

CHAPMAN, J. & MARTIN, D. 2013. Nurses told, 'you're not too posh to wash a patient': Minister orders student nurses back to basics to improve compassion in nhs. *Daily Mail*

CHAPMAN, J. J. 2018. How do nurses perceive role-taking and emotional labor processes to influence work–family spillover? *Contemporary Perspectives in Family Research,* 13**,** 245-264.

CHO, E., LEE, N. J., KIM, E. Y., KIM, S., LEE, K., PARK, K. O. & SUNG, Y. H. 2016. Nurse staffing level and overtime associated with patient safety, quality of care, and care left undone in hospitals: A cross-sectional study. *Int J Nurs Stud,* 60**,** 263-71.

CHUANG, S. & HOLLNAGEL, E. 2017. Challenges in implementing resilient health care. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

CLARKE, S. P. 2011. The future of nursing workforce research. *Journal of Research in Nursing,* 16**,** 487-488.

CLAY-WILLIAMS, R. & BRAITHWAITE, J. 2017. Realigning work-as-imagined and work-as-done: Can training help? *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

CLAY-WILLIAMS, R., HOUNSGAARD, J. & HOLLNAGEL, E. 2015. Where the rubber meets the road: Using fram to align work-as-imagined with work-as-done when implementing clinical guidelines. *Implement Sci,* 10**,** 1-8.

COBURN, D. 1994. Professionalization and proletarianization: Medicine, nursing, and chiropractic in historical perspective. *Labour / Le Travail,* 34**,** 139-162.

COHEN, R. L. 2011. Time, space and touch at work: Body work and labour process (re)organisation. *Sociol Health Illn,* 33**,** 189-205.

COLQUHOUN, H. L., LEVAC, D., O'BRIEN, K. K., STRAUS, S., TRICCO, A. C., PERRIER, L., KASTNER, M. & MOHER, D. 2014. Scoping reviews: Time for clarity in definition, methods, and reporting. *Journal of Clinical Epidemiology,* 67**,** 1291-1294.

CONNOLLY, M., PERRYMAN, J., MCKENNA, Y., ORFORD, J., THOMSON, L., SHUTTLEWORTH, J. & COCKSEDGE, S. 2010. Sage & thyme™: A model for training health and social care professionals in patient-focussed support. *Patient Education and Counseling,* 79**,** 87-93.

CONNOLLY, T. M., BOYLE, E. A., MACARTHUR, E., HAINEY, T. & BOYLE, J. M. 2012. A systematic literature review of empirical evidence on computer games and serious games. *Computers & Education,* 59**,** 661-686.

COOK, R. I. & NEMETH, C. P. 2010. "Those found responsible have been sacked": Some observations on the usefulness of error. *Cognition, Technology & Work,* 12**,** 87-93.

CORBIN, J. 2008. Is caring a lost art in nursing? *Int J Nurs Stud,* 45**,** 163-5.

CRAMER, H., POHLABELN, H. & HABERMANN, M. 2013. Factors causing or influencing nursing errors as perceived by nurses: Findings of a cross-sectional study in german nursing homes and hospitals. *Journal of Public Health,* 21**,** 145-153.

CROCKER, J. C., RICCI-CABELLO, I., PARKER, A., HIRST, J. A., CHANT, A., PETIT-ZEMAN, S., EVANS, D. & REES, S. 2018. Impact of patient and public involvement on enrolment and retention in clinical trials: Systematic review and meta-analysis. *bmj,* 363.

DAMEN, N. L., DE VOS, M. S., MOESKER, M. J., BRAITHWAITE, J., DE LIND VAN WIJNGAARDEN, R. A. F., KAPLAN, J., HAMMING, J. F. & CLAY-WILLIAMS, R. 2018. Preoperative anticoagulation management in everyday clinical practice: An international comparative analysis of work-as-done using the functional resonance analysis method. *J Patient Saf,* 0**,** 1-9.

DANKBAAR, M. E., RICHTERS, O., KALKMAN, C. J., PRINS, G., TEN CATE, O. T., VAN MERRIENBOER, J. J. & SCHUIT, S. C. 2017. Comparative effectiveness of a serious game and an e-module to support patient safety knowledge and awareness. *BMC Med Educ,* 17**,** 1-10.

DEAN, J. 2017. *Doing reflexivity: An introduction,* Bristol, UK, Policy Press.

DEBONO, D. S. & BRAITHWAITE, J. 2015. Workarounds in nursing practice in acute care: A case of a health care arms race? *In:* WEARS, R., HOLLNAGEL, E. & BRAITHWAITE, J. (eds.) *Resilient health*

care: The resilience of everyday clinical work. Farnham, Surrey: Ashgate.

DEBONO, D. S., GREENFIELD, D., TRAVAGLIA, J. F., LONG, J. C., BLACK, D., JOHNSON, J. & BRAITHWAITE, J. 2013. Nurses' workarounds in acute healthcare settings: A scoping review. *BMC Health Serv Res,* 13**,** 175.

DELGADO, C., UPTON, D., RANSE, K., FURNESS, T. & FOSTER, K. 2017. Nurses' resilience and the emotional labour of nursing work: An integrative review of empirical literature. *Int J Nurs Stud,* 70**,** 71-88.

DEPARTMENT OF HEALTH AND SOCIAL CARE 2017. Health secretary announces nursing workforce reforms. London.

DIEFENDORFF, J. M., ERICKSON, R. J., GRANDEY, A. A. & DAHLING, J. J. 2011. Emotional display rules as work unit norms: A multilevel analysis of emotional labor among nurses. *J Occup Health Psychol,* 16**,** 170-186.

DIXON-WOODS, M., BAKER, R., CHARLES, K., DAWSON, J., JERZEMBEK, G., MARTIN, G., MCCARTHY, I., MCKEE, L., MINION, J., OZIERANSKI, P., WILLARS, J., WILKIE, P. & WEST, M. 2014. Culture and behaviour in the english national health service: Overview of lessons from a large multimethod study. *BMJ Qual Saf,* 23**,** 106-15.

DONETTO, S., PENFOLD, C., ANDERSON, J., ROBERT, G. & MABEN, J. 2017. Nursing work and sensory experiences of hospital design: A before and after qualitative study following a move to all-single room inpatient accommodation. *Health & Place,* 46**,** 121-129.

DOWLING, E., NUNES, R. & TROTT, B. 2007. Immaterial and affective labour: Explored. *Ephemera: Theory and Politics in Organization,* 7**,** 1-7.

DRAPER, J. 2014. Embodied practice: Rediscovering the 'heart'of nursing. *J Adv Nurs,* 70**,** 2235-2244.

DRESSER, S. 2012. The role of nursing surveillance in keeping patients safe. *J Nurs Adm,* 42**,** 361-8.

DREYFUS, S. E. & DREYFUS, H. L. 1980. A five-stage model of the mental activities involved in directed skill acquisition. DTIC Document.

DUCHSCHER, J. E. B. 2009. Transition shock: The initial stage of role adaptation for newly graduated registered nurses. *J Adv Nurs,* 65**,** 1103-1113.

EBRIGHT, P. R. 2010. The complex work of rns: Implications for healthy work environments. *Online J Issues Nurs,* 15.

EBRIGHT, P. R., PATTERSON, E. S., CHALKO, B. A. & RENDER, M. L. 2003. Understanding the complexity of registered nurse work in acute care settings. *J Nurs Adm,* 33**,** 630-8.

EDWARD, K. L., HERCELINSKYJ, G. & GIANDINOTO, J. A. 2017. Emotional labour in mental health nursing: An integrative systematic review. *Int J Ment Health Nurs,* 26**,** 215-225.

ELFERING, A., GREBNER, S. & DUDAN, A. 2011. Job characteristics in nursing and cognitive failure at work. *Saf Health Work,* 2**,** 194-200.

ELFERING, A., GREBNER, S., LEITNER, M., HIRSCHMULLER, A., KUBOSCH, E. J. & BAUR, H. 2017. Quantitative work demands,

emotional demands, and cognitive stress symptoms in surgery nurses. *Psychol Health Med,* 22**,** 604-610.

ELLIOTT, C. 2017. Emotional labour: Learning from the past, understanding the present. *Br J Nurs,* 26**,** 1070-1077.

ENGELS, J. A., VAN DER GULDEN, J. W. J., SENDEN, T. F., HERTOG, C. A. W. M., KOLK, J. J. & BINKHORST, R. A. 1994. Physical work load and its assessment among the nursing staff in nursing homes. *Journal of Occupational and Environmental Medicine,* 36**,** 338-345.

EPP, K. 2012. Burnout in critical care nurses: A literature review. *Dynamics,* 23**,** 25-31.

FIELD, V. K., GALE, T., KALKMAN, C., KATO, P. & WARD, C. T. 2018. A serious game to train patient safety outside the classroom: A pilot study of acceptability. *BMJ Simulation and Technology Enhanced Learning,* 5**,** 227-228.

FONTEYN, M. E., KUIPERS, B. & GROBE, S. J. 1993. A description of think aloud method and protocol analysis. *Qual Health Res,* 3**,** 430-441.

FORD, S. 2018. Rcn warns of 'continuing down same path' as bawa-garba case. *Nursing Times.*

FRASER, S. W. & GREENHALGH, T. 2001. Coping with complexity: Educating for capability. *BMJ,* 323**,** 799-803.

GALE, N. K., HEATH, G., CAMERON, E., RASHID, S. & REDWOOD, S. 2013. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Med Res Methodol,* 13**,** 117-125.

GEORGE, A. 2008. Nurses, community health workers, and home carers: Gendered human resources compensating for skewed health systems. *Glob Public Health,* 3**,** 75-89.

GILLETT, K. 2012. A critical discourse analysis of british national newspaper representations of the academic level of nurse education: Too clever for our own good? *Nurs Inq,* 19**,** 297-307.

GILLIS, A. & JACKSON, W. 2002. *Research for nurses: Methods and interpretation*, FA Davis Company.

GIMLIN, D. 2007. What is 'body work'? A review of the literature. *Sociology Compass,* 1**,** 353-370.

GODDARD, H. 1953. *The work of nurses in hospital wards: Report of a job-analysis,* London, Nuffield Provincial Hospitals Trust.

GRANT, M. J. & BOOTH, A. 2009. A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Info Libr J,* 26**,** 91-108.

GRAY, B. 2009. The emotional labour of nursing - defining and managing emotions in nursing work. *Nurse Educ Today,* 29**,** 168-175.

GRAY, B. 2010. Emotional labour, gender and professional stereotypes of emotional and physical contact, and personal perspectives on the emotional labour of nursing. *Journal of Gender Studies,* 19**,** 349-360.

GRAY, B. & SMITH, P. 2009. Emotional labour and the clinical settings of nursing care: The perspectives of nurses in east london. *Nurse Educ Pract,* 9**,** 253-61.

GREEN, J. & THOROGOOD, N. 2018. *Qualitative methods for health research,* London, Sage.

GREENHALGH, T. & PEACOCK, R. 2005. Effectiveness and efficiency of search methods in systematic reviews of complex evidence: Audit of primary sources. *BMJ,* 331**,** 1064-5.

GREENHALGH, T., ROBERT, G., MACFARLANE, F., BATE, P., KYRIAKIDOU, O. & PEACOCK, R. 2005. Storylines of research in diffusion of innovation: A meta-narrative approach to systematic review. *Soc Sci Med,* 61**,** 417-30.

GREENHALGH, T., WONG, G., WESTHORP, G. & PAWSON, R. 2011. Protocol-realist and meta-narrative evidence synthesis: Evolving standards (rameses). *BMC Med Res Methodol,* 11**,** 115.

GUBA, E. G. 1981. Criteria for assessing the trustworthiness of naturalistic inquiries. *ECTJ,* 29**,** 75.

GUBA, E. G. & LINCOLN, Y. S. 1994. Competing paradigms in qualitative research. *Handbook of Qualitative Qesearch,* 2**,** 105.

GUISE, V., CHAMBERS, M., CONRADI, E., KAVIA, S. & VÄLIMÄKI, M. 2012a. Development, implementation and initial evaluation of narrative virtual patients for use in vocational mental health nurse training. *Nurse Educ Today,* 32**,** 683-689.

GUISE, V., CHAMBERS, M. & VALIMAKI, M. 2012b. What can virtual patient simulation offer mental health nursing education? *J Psychiatr Ment Health Nurs,* 19**,** 410-418.

HAN, S. S., HAN, J. W. & KIM, Y. H. 2018. Effect of nurses' emotional labor on customer orientation and service delivery: The mediating effects of work engagement and burnout. *Saf Health Work,* 9**,** 441-446.

HANNIG, A., KUTH, N., OZMAN, M., JONAS, S. & SPRECKELSEN, C. 2012. Emedoffice: A web-based collaborative serious game for teaching optimal design of a medical practice. *BMC Med Educ,* 12**,** 104.

HANNIGAN, B., SIMPSON, A., COFFEY, M., BARLOW, S. & JONES, A. 2018. Care coordination as imagined, care coordination as done: Findings from a cross-national mental health systems study. *Int J Integr Care,* 18**,** 12.

HART, J., IACOVIDES, I., ADAMS, A., OLIVEIRA, M. & MARGOUDI, M. Understanding engagement within the context of a safety critical game. Proceedings of the Annual Symposium on Computer-Human Interaction in Play, 2017. ACM, 253-264.

HART, S. M. & WARREN, A. M. 2013. Understanding nurses' work: Exploring the links between changing work, labour relations, workload, stress, retention and recruitment. *Economic and Industrial Democracy,* 36**,** 305-329.

HARVEY, C. L., THOMPSON, S., WILLIS, E., MEYER, A. & PEARSON, M. 2018. Understanding how nurses ration care. *Journal of Health Organization and Management,* 32**,** 494-510.

HENDERSON, A. 2001. Emotional labor and nursing: An under-appreciated aspect of caring work. *Nurs Inq,* 8**,** 130-138.

HENDRICH, A., CHOW, M., SKIERCZYNSKI, B. A. & LU, Z. 2008. A 36-hospital time and motion study: How do medical-surgical nurses spend their time? *RCHE Publications,* 12**,** 25-34.

HENDRICKSON, G., DODDATO, T. M. & KOVNER, C. T. 1990. How do nurses use their time? *Journal of Nursing Administration,* 20**,** 31-37.

HERNANDEZ, C. A. 2009. Theoretical coding in grounded theory methodology. *Grounded Theory Review: An International Journal,* 8**,** 51-66.

HICKEY, G. & CHAMBERS, M. 2019. Patient and public involvement and engagement: Mind the gap. *Health expectations: an international journal of public participation in health care and health policy,* 22**,** 607.

HIGUCHI, K. A. S. & DONALD, J. G. 2002. Thinking processes used by nurses in clinical decision making. *Journal of Nursing Education,* 41**,** 145-153.

HOCHSCHILD, A. R. 1983. *The managed heart : Commercialization of human feeling,* Berkeley, University of California Press.

HOCKEY, J. & ALLEN-COLLINSON, J. 2009. The sensorium at work: The sensory phenomenology of the working body. *The Sociological Review,* 57**,** 217-239.

HOCKEY, L. 1977. The nurse's contribution to care in a changing setting. *J Adv Nurs,* 2**,** 147-56.

HOLLINGSWORTH, J. C., CHISHOLM, C. D., GILES, B. K., CORDELL, W. H. & NELSON, D. R. 1998. How do physicians and nurses spend their time in the emergency department? *Ann Intern Med,* 31**,** 87-91.

HOLLNAGEL, E. 2006. Resilience: The challenge of the unstable. *In:* HOLLNAGEL, E., WOODS, D. D. & LEVESON, N. (eds.) *Resilience*

engineering: Concepts and precepts. Hampshire: Ashgate Publishing, Ltd.

HOLLNAGEL, E. 2009. The four cornerstones of resilience engineering. *In:* NEMETH, C., HOLLNAGEL, E. & DEKKER, S. (eds.) *Resilience engineering perspectives.* Farnham, UK: Ashgate.

HOLLNAGEL, E. 2012. *Fram - the functional resonance analysis method: Modelling complex socio-technical systems.,* Farnham, UK, Ashgate.

HOLLNAGEL, E. 2015. Why is work-as-imagined different from work-as-done? *In:* WEARS, R., HOLLNAGEL, E. & BRAITHWAITE, J. (eds.) *The resilience of everyday clinical work.* Farnham, Surrey: Ashgate.

HOLLNAGEL, E. 2017. Prologue: Why do our expectations of how work should be done never correspond exactly to how work is done? *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

HOLLNAGEL, E., WEARS, R. L. & BRAITHWAITE, J. 2015. From safety-1 to safety-2: A white paper. Denmark: The Resilient Health Care Net.

HOLLNAGEL, E., WOODS, D. D. & LEVESON, N. 2006. *Resilience engineering: Concepts and precepts,* Hampshire, Ashgate Publishing, Ltd.

HUNT, M. R. 2009. Strengths and challenges in the use of interpretive description: Reflections arising from a study of the moral experience of health professionals in humanitarian work. *Qual Health Res,* 19**,** 1284-92.

HUNTE, G. S. & WEARS, R. 2017. Power and resilience in practice: Fitting a 'square peg in a round hole' in everyday clinical work. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

HUYNH, T., ALDERSON, M. & THOMPSON, M. 2008. Emotional labour underlying caring: An evolutionary concept analysis. *J Adv Nurs,* 64**,** 195-208.

IACONO, V. L., SYMONDS, P. & BROWN, D. H. 2016. Skype as a tool for qualitative research interviews. *Sociological Research Online,* 21**,** 1-15.

IACOVIDES, I., COX, A., FURNISS, D., STAWARZ, K., JENNETT, C. & ADAMS, A. 2019. Supporting engagement in research through a game design competition. *Research for All***,** (In Press).

IACOVIDES, I. & COX, A. L. Moving beyond fun: Evaluating serious experience in digital games. Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems, 2015. 2245-2254.

JACKSON, J. 2015. *Managing exposure: A grounded theory of burnout and resilience in critical care nurses.* Master of Nursing, Athabasca University.

JAMES, N. 1989. Emotional labour: Skill and work in the social regulation of feelings. *Sociological Review,* 37**,** 15-42.

JAMES, N. 1992. Care = organisation + physical labour + emotional labour. *Sociology of Health and Illness,* 14**,** 488-509.

JANGHORBAN, R., LATIFNEJAD ROUDSARI, R. & TAGHIPOUR, A. 2014. Skype interviewing: The new generation of online synchronous interview in qualitative research. *Int J Qual Stud Health Well-being,* 9**,** 1-3.

JOHANSEN, M. L. & O'BRIEN, J. L. 2016. Decision making in nursing practice: A concept analysis. *Nurs Forum,* 51**,** 41-48.

JOHNSON, A. & LANE, P. 2017. Resilience work-as-done in everyday clinical work. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

JUN, J., KOVNER, C. T. & STIMPFEL, A. W. 2016. Barriers and facilitators of nurses' use of clinical practice guidelines: An integrative review. *International Journal of Nursing Studies,* 60**,** 54-68.

JUNGBAUER, F. H. W., STEENSTRA, F. B., GROOTHOFF, J. W. & COENRAADS, P. J. 2005. Characteristics of wet work in nurses. *Int Arch Occup Environ Health,* 78**,** 248-251.

KARIMI, L., LEGGAT, S. G., DONOHUE, L., FARRELL, G. & COUPER, G. E. 2014. Emotional rescue: The role of emotional intelligence and emotional labour on well-being and job-stress among community nurses. *J Adv Nurs,* 70**,** 176-186.

KATAOKA-YAHIRO, M. & SAYLOR, C. 1994. A critical thinking model for nursing judgment. *J Nurs Educ,* 33**,** 351-6.

KELLY, D., ROSS, S., GRAY, B. & SMITH, P. 2000. Death, dying and emotional labour: Problematic dimensions of the bone marrow transplant nursing role? *J Adv Nurs,* 32**,** 952-960.

KHALED, R. 2018. Questions over answers: Reflective game design. *Playful disruption of digital media.* Springer.

KOCH, S. H., WESTENSKOW, D., WEIR, C., AGUTTER, J., HAAR, M., GÖRGES, M., LIU, D. & STAGGERS, N. 2012. Icu nurses' evaluations of integrated information displays on user satisfaction and perceived mental workload. *Quality of Life Through Quality of Information,* 180**,** 383-387.

KOW, A. W. C., ANG, B. L. S., CHONG, C. S., TAN, W. B. & MENON, K. R. 2016. Innovative patient safety curriculum using ipad game (passed) improved patient safety concepts in undergraduate medical students. *World J Surg,* 40**,** 2571-2580.

KOWALCHUK, L. 2016. Nurses' labor conditions, gender, and the value of care work in post-neoliberal el salvador. *Critical Sociology,* 44**,** 777-791.

KOWALCHUK, L. 2018. Patriarchy, new left post-neoliberalism, and the valuing of care work: The labor conditions of nicaraguan nurses under sandinismo's "second stage". *Latin American Research Review,* 53**,** 741-756.

KUHN, T. S. 1962. *The structure of scientific revolutions*, University of Chicago press.

LANE, T. S., ARMIN, J. & GORDON, J. S. 2015. Online recruitment methods for web-based and mobile health studies: A review of the literature. *J Med Internet Res,* 17**,** e183.

LAVANDER, P., MERILAINEN, M. & TURKKI, L. 2016. Working time use and division of labour among nurses and health-care workers in hospitals - a systematic review. *J Nurs Manag,* 24**,** 1027-1040.

LAWLER, J. 1991. *Behind the screens,* Melbourne, Churchill Livingstone.

LEVAC, D., COLQUHOUN, H. & O'BRIEN, K. K. 2010. Scoping studies: Advancing the methodology. *Implement Sci,* 5**,** 69-78.

LIASCHENKO, J. & PETER, E. 2004. Nursing ethics and conceptualizations of nursing: Profession, practice and work. *J Adv Nurs,* 46**,** 488-95.

LINCOLN, Y. S. & GUBA, E. G. 1985. *Naturalistic inquiry,* Newberry Park, Sage.

LOMAS, C. 2008. Patient safety congress: Nurses taught infection control with video game. *Nursing Times.*

LOPEZ, K. D., GERLING, G. J., CARY, M. P. & KANAK, M. F. 2010. Cognitive work analysis to evaluate the problem of patient falls in an inpatient setting. *J Am Med Inform Assoc,* 17**,** 313-21.

LOPEZ, S. H. 2006. Emotional labor and organized emotional care: Conceptualizing nursing home care work. *Work and Occupations,* 33**,** 133-160.

LU, A. S. 2013. Serious games for healthcare: Applications and implications. New York: Mary Ann Liebert, Inc. .

LUNDGRÉN-LAINE, H., KONTIO, E., PERTTILÄ, J., KORVENRANTA, H., FORSSTRÖM, J. & SALANTERÄ, S. 2011. Managing daily intensive care activities: An observational study concerning ad hoc decision making of charge nurses and intensivists. *Critical Care,* 15**,** 1-10.

LUNDGREN-LAINE, H. & SALANTERA, S. 2010. Think-aloud technique and protocol analysis in clinical decision-making research. *Qual Health Res,* 20**,** 565-75.

MABEN, J. 2008. The art of caring: Invisible and subordinated? A response to juliet corbin: 'Is caring a lost art in nursing?'. *Int J Nurs Stud,* 45**,** 335-8.

MABEN, J., CORNWELL, J. & SWEENEY, K. 2009. In praise of compassion. *Journal of Research in Nursing,* 15**,** 9-13.

MABEN, J., LATTER, S. & CLARK, J. M. 2006. The theory–practice gap: Impact of professional–bureaucratic work conflict on newly-qualified nurses. *J Adv Nurs,* 55**,** 465-477.

MABEN, J., LATTER, S. & CLARK, J. M. 2007. The sustainability of ideals, values and the nursing mandate: Evidence from a longitudinal qualitative study. *Nurs Inq,* 14**,** 99-113.

MACRAE, C. & WIIG, S. 2019. Resilience: From practice to theory and back again. *Exploring resilience.* Springer.

MANN, S. & COWBURN, J. 2005. Emotional labour and stress within mental health nursing. *J Psychiatr Ment Health Nurs,* 12**,** 154-62.

MANNION, R. & BRAITHWAITE, J. 2017. False dawns and new horizons in patient safety research and practice. *Int J Health Policy Manag,* 6**,** 685-689.

MARK, A. & MANN, S. 2005. A health-care model of emotional labour: An evaluation of the literature and development of a model. *Journal of Health Organization and Management,* 19**,** 304-317.

MASON, J. 2017. *Qualitative researching,* London, Sage.

MAUNO, S., RUOKOLAINEN, M., KINNUNEN, U. & DE BLOOM, J. 2016. Emotional labour and work engagement among nurses: Examining perceived compassion, leadership and work ethic as stress buffers. *J Adv Nurs,* 72**,** 1169-81.

MCCANN, K. & MCKENNA, H. P. 1993. An examination of touch between nurses and elderly patients in a continuing care setting in northern ireland. *J Adv Nurs,* 18**,** 838-846.

MCCLURE, R. & MURPHY, C. 2007. Contesting the dominance of emotional labour in professional nursing. *J Health Organ Manag,* 21**,** 101-20.

MCCREIGHT, B. S. 2005. Perinatal grief and emotional labour: A study of nurses' experiences in gynae wards. *International Journal of Nursing Studies,* 42**,** 439-448.

MCFARLANE, J. K. 1976. A charter for caring. *J Adv Nurs,* 1**,** 187-196.

MCNAB, D., BOWIE, P., MORRISON, J. & ROSS, A. 2016. Understanding patient safety performance and educational needs using the 'safety-ii' approach for complex systems. *Educ Prim Care,* 27**,** 443-450.

MEKLER, E., IACOVIDES, I. & BOPP, J. "A game that makes you question..." exploring the role of reflection for the player experience. Proceedings of the annual ACM Conference CHI Play 2018, 2018. ACM.

MELIA, K. M. 1979. A sociological approach to the analysis of nursing work. *J Adv Nurs,* 4**,** 57-67.

MITCHELL, G. J. 1999. Evidence-based practice: Critique and alternative view. *Nurs Sci Q,* 12**,** 30-35.

MOHER, D., LIBERATI, A., TETZLAFF, J., ALTMAN, D. G. & THE PRISMA GROUP 2009. Preferred reporting items for systematic reviews and meta-analyses: The prisma statement. *PLoS Med,* 6**,** 264-269.

MONTGOMERY, A. J., PANAGOPOLOU, E. & BENOS, A. 2005. Emotional labour at work and at home among greek health-care home professionals. *J Health Organ Manag,* 19**,** 395-408.

MONTI, E. J. & TINGEN, M. S. 1999. Multiple paradigms of nursing science. *Adv Nurs Sci,* 21**,** 64-80.

MOORES, B. & MOULT, A. 1977. Sources of variation in the pressure of work index in thirty hospital wards. *J Adv Nurs,* 2**,** 271-9.

MOORES, B. & MOULT, A. 1979a. Patterns of nurse activity. *J Adv Nurs,* 4**,** 137-149.

MOORES, B. & MOULT, A. 1979b. The relationship between the level of nurse staffing and the patterns of patient care and staff activity. *J Adv Nurs,* 4**,** 299-306.

MORLEY, G., IVES, J., BRADBURY-JONES, C. & IRVINE, F. 2017. What is 'moral distress'? A narrative synthesis of the literature. *Nursing Ethics,* 26**,** 646-662.

MORSE, J. M. 2015. Critical analysis of strategies for determining rigor in qualitative inquiry. *Qual Health Res,* 25**,** 1212-22.

MORSE, J. M., BARRETT, M., MAYAN, M., OLSON, K. & SPIERS, J. 2002. Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods,* 1**,** 13-22.

MORSE, J. M. & FIELD, P. A. 1995. *Nursing research: The application of qualitative approaches*, Nelson Thornes.

MSISKA, G., SMITH, P. & FAWCETT, T. 2014. Exposing emotional labour experienced by nursing students during their clinical learning experience: A malawian perspective. *International Journal of Africa Nursing Sciences,* 1**,** 43-50.

MULROW, C. D. 1994. Rationale for systematic reviews. *BMJ,* 309**,** 597-599.

MYNY, D., VAN GOUBERGEN, D., GOBERT, M., VANDERWEE, K., VAN HECKE, A. & DEFLOOR, T. 2011. Non-direct patient care factors influencing nursing workload: A review of the literature. *J Adv Nurs,* 67**,** 2109-29.

NAKAJIMA, K. 2015. Blood transfusions with health information technology in emergency settings from a safety-ii perspective. *In:* WEARS, R., HOLLNAGEL, E. & BRAITHWAITE, J. (eds.) *Resilient health care: The resilience of everyday clinical work.* Farnham, Surrey: Ashgate.

NAKAJIMA, K., MASUDA, S. & NAKAJIMA, S. 2017. Exploring ways to capture and facilitate work-as-done that interact with health information technology. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

NATIONAL INSTITUTE OF HEALTH RESEARCH 2019. Staffing on wards: Making decisions about healthcare staffing, improving effectiveness and supporting staff to care well.

NELSON, S. & GORDON, S. (eds.) 2006. *The complexities of care: Nursing reconsidered,* London: ILR Press.

NG, L. S. & CURLEY, M. A. 2012. "One more thing to think about..." Cognitive burden experienced by intensive care unit nurses when implementing a tight glucose control protocol. *J Diabetes Sci Technol,* 6**,** 58-64.

NHS DIGITAL. 2019. *Nhs workforce statistics. Retrieved from: Https://www.Ethnicity-facts-figures.Service.Gov.Uk/workforce-and-business/workforce-diversity/nhs-workforce/latest* [Online]. Available: https://www.ethnicity-facts-figures.service.gov.uk/workforce-and-business/workforce-diversity/nhs-workforce/latest [Accessed April 11, 2019].

NHS ENGLAND 2019. The nhs long term plan. London: NHS England.

NHS FEDERATION. 2016. *Key statistics on the nhs. Retrieved from: Http://www.Nhsconfed.Org/resources/key-statistics-on-the-nhs* [Online]. Available: http://www.nhsconfed.org/resources/key-statistics-on-the-nhs [Accessed].

NICHOLL, D. 2018. Bawa-garba—from blame culture to just culture. *BMJ Opinion*.

NORMAN, I. & GRIFFITHS, P. 2014. The rise and rise of the systematic review. *Int J Nurs Stud,* 51**,** 1-3.

NORTVEDT, P. 2001. Needs, closeness and responsibilities. An inquiry into some rival moral considerations in nursing care. *Nursing Philosophy,* 2**,** 112-121.

NURSING & MIDWIFERY COUNCIL 2015. Revised code for nurses and midwives. London: Nursing & Midwifery Council.

NYSSEN, A.-S. & BETASTEGUI, P. 2017. Is system resilience maintained at the expense of individual resilience? *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

O'CONNOR, A., JACKSON, L., GOLDSMITH, L. & SKIRTON, H. 2014. Can i get a retweet please? Health research recruitment and the twittersphere. *J Adv Nurs,* 70**,** 599-609.

O'SHEA, A., BOAZ, A. L. & CHAMBERS, M. 2019. A hierarchy of power: The place of patient and public involvement in healthcare service development. *Frontiers in Sociology,* 4**,** 38.

OATES, J. 2015. Use of skype in interviews: The impact of the medium in a study of mental health nurses. *Nurse Res,* 22**,** 13.

OUELLETTE, L. & WILSON, J. 2011. Women's work: Affective labour and convergence culture. *Cultural Studies,* 25**,** 548-565.

PALINKAS, L. A., HORWITZ, S. M., GREEN, C. A., WISDOM, J. P., DUAN, N. & HOAGWOOD, K. 2015. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and policy in mental health and mental health services research,* 42**,** 533-544.

PATRIARCA, R., BERGSTRÖM, J., DI GRAVIO, G. & COSTANTINO, F. 2018. Resilience engineering: Current status of the research and future challenges. *Safety Science,* 102**,** 79-100.

PATRIARCA, R., GRAVIO, G. D., COSTANTINO, F., TRONCI, M., SEVERONI, A., VERNILE, A. & BILOTTA, F. 2017. A paradigm shift to enhance patient safety in healthcare, a resilience engineering

approach: A scoping review of available evidence. *International Journal of Healthcare Technology and Management,* 16**,** 319-343.

PATTERSON, E. S., EBRIGHT, P. R. & SALEEM, J. J. 2011. Investigating stacking: How do registered nurses prioritize their activities in real-time? *International Journal of Industrial Ergonomics,* 41**,** 389-393.

PATTERSON, M., DEUTSCH, E. S. & JACOBSON, L. 2017. Simulation: Closing the gap between work-as-imagined and work-as-done. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

PEMBREY, S. E. 1980. *The ward sister-key to nursing: A study of the organisation of individualised nursing,* London, Royal College of Nursing.

PERRON, S. F. 2015. The cognitive load of registered nurses during medication administration in an electronic health record environment.

PERRY, S. J. & FAIRBANKS, R. J. 2015. Tempest in a teapot: Standardisation, and workarounds in everyday clinical work. *In:* WEARS, R., HOLLNAGEL, E. & BRAITHWAITE, J. (eds.) *Resilient health care: The resilience of everyday clinical work.* Farnham, Surrey: Ashgate.

PHILLIPS, S. 1996. Labouring the emotions: Expanding the remit of nursing work? *J Adv Nurs,* 24**,** 139-43.

PICARDO, J. M., LOPEZ-FERNANDEZ, C. & HERVAS, M. J. 2013. The spanish version of the emotional labour scale (els): A validation study. *Nurse Educ Today,* 33**,** 1130-1135.

PISANIELLO, S. L., WINEFIELD, H. R. & DELFABBRO, P. H. 2012. The influence of emotional labour and emotional work on the occupational health and wellbeing of south australian hospital nurses. *Journal of Vocational Behavior,* 80**,** 579-591.

PLSEK, P. E. & GREENHALGH, T. 2001. The challenge of complexity in health care. *BMJ,* 323**,** 625-628.

PLSEK, P. E. & WILSON, T. 2001. Complexity, leadership, and management in healthcare organisations. *BMJ,* 323**,** 746-749.

POLAND, B. D. 1995. Transcription quality as an aspect of rigor in qualitative research. *Qualitative Inquiry,* 1**,** 290-310.

POTTER, P., BOXERMAN, S., WOLF, L., MARSHALL, J., GRAYSON, D., SLEDGE, J. & EVANOFF, B. 2004. Mapping the nursing process: A new approach for understanding the work of nursing. *J Nurs Adm,* 34**,** 101-9.

POTTER, P., WOLF, L., BOXERMAN, S., GRAYSON, D., SLEDGE, J., DUNAGAN, C. & EVANOFF, B. 2005a. An analysis of nurses' cognitive work: A new perspective for understanding medical errors. *Advances in Patient Safety,* 1**,** 39-51.

POTTER, P., WOLF, L., BOXERMAN, S., GRAYSON, D., SLEDGE, J., DUNAGAN, C. & EVANOFF, B. 2005b. Understanding the cognitive work of nursing in the acute care environment. *J Nurs Adm,* 35**,** 327-35.

QUANCE, M. A. 2007. *The social organization of nurses' labour pain work.* Ph.D., University of Calgary (Canada).

RAFFERTY, A. M., CLARKE, S. P., COLES, J., BALL, J., JAMES, P., MCKEE, M. & AIKEN, L. H. 2007. Outcomes of variation in hospital nurse staffing in english hospitals: Cross-sectional analysis of survey data and discharge records. *Int J Nurs Stud,* 44**,** 175-82.

RANKIN, J. M. & CAMPBELL, M. L. 2006. *Managing to nurse: Inside canada's health care reform*, University of Toronto Press.

RATHERT, C., WYRWICH, M. D. & BOREN, S. A. 2013. Patient-centered care and outcomes: A systematic review of the literature. *Medical Care Research and Review,* 70**,** 351-379.

RAY, P. 2016. 'Is this even work?' Nursing care and stigmatised labour. *Economic and Political Weekly,* 51**,** 60-69.

RECIO-SAUCEDO, A., DALL'ORA, C., MARUOTTI, A., BALL, J., BRIGGS, J., MEREDITH, P., REDFERN, O. C., KOVACS, C., PRYTHERCH, D. & SMITH, G. B. 2018. What impact does nursing care left undone have on patient outcomes? Review of the literature. *Journal of Clinical Nursing,* 27**,** 2248-2259.

REDDING, D. A. & ROBINSON, S. 2009. Interruptions and geographic challenges to nurses' cognitive workload. *J Nurs Care Qual,* 24**,** 194-200; quiz 201-2.

REE, E., WIIG, S., MANSER, T. & STORM, M. 2019. How is patient involvement measured in patient centeredness scales for health professionals? A systematic review of their measurement properties and content. *BMC health services research,* 19**,** 12.

RICCIARDI, F. & PAOLIS, L. T. D. 2014. A comprehensive review of serious games in health professions. *International Journal of Computer Games Technology,* 2014**,** 9.

RICHARDS, L. & MORSE, J. M. 2012. *Readme first for a user's guide to qualitative methods*, Sage.

RICHARDSON, S. 1996. Frontier nursing: Nursing work and training in alberta, 1890-1905. *Can J Nurs Res,* 28**,** 113-40.

RITCHIE, J. & SPENCER, L. 2002. Qualitative data analysis for applied policy research. *In:* BRYMAN, L. & BURGESS, B. (eds.) *Analysing qualitative data.* Taylor & Francis.

RITCHIE, J., SPENCER, L. & O'CONNOR, W. 2003. Carrying out qualitative analysis. *In:* RITCHIE, J. & LEWIS, J. (eds.) *Qualitative research practice: A guide for social science students and researchers.* Sage.

ROBERT, G. 2017. *RE: Personal communication regarding the use of evaluation in meta-narrative reviews.* .

ROBSON, R. 2015. Ecw in complex adaptive systems. *In:* WEARS, R., HOLLNAGEL, E. & BRAITHWAITE, J. (eds.) *Resilient health care: Resilience of everyday clinical work.*

ROSS, A., SHERRIFF, A., KIDD, J., GNICH, W., ANDERSON, J., DEAS, L. & MACPHERSON, L. 2018. A systems approach using the functional resonance analysis method to support fluoride varnish application for children attending general dental practice. *Appl Ergon,* 68**,** 294-303.

ROSSO, C. B. & SAURIN, T. A. 2018. The joint use of resilience engineering and lean production for work system design: A study in healthcare. *Appl Ergon,* 71**,** 45-56.

ROUSE, W. B. 2008. Health care as a complex adaptive system: Implications for design and management. *National Academy of Engineering,* 38**,** 17.

ROYAL COLLEGE OF NURSING 2013. Paperwork and administration. London: Royal College of Nursing.

ROYAL COLLEGE OF NURSING LONDON 2015. Caring for the capital: Nursing and the rcn in london. London: Royal College of Nursing.

SACRISTÁN, J. A., AGUARÓN, A., AVENDAÑO-SOLÁ, C., GARRIDO, P., CARRIÓN, J., GUTIÉRREZ, A., KROES, R. & FLORES, A. 2016. Patient involvement in clinical research: Why, when, and how. *Patient preference and adherence,* 10**,** 631.

SANDELOWSKI, M. 1986. The problem of rigor in qualitative research. *Adv Nurs Sci,* 8**,** 27-37.

SANDELOWSKI, M. 1993. Rigor or rigor mortis: The problem of rigor in qualitative research revisited. *Adv Nurs Sci,* 16**,** 1-8.

SAURIN, T. A., ROSSO, C. B. & COLLIGAN, L. 2017. Towards a resilient and lean health care. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

SAVAGE, J. 1997. Gestures of resistance: The nurse's body in contested space. *Nurs Inq,* 4**,** 237-45.

SCHEFFER, B. K. & RUBENFELD, M. G. 2000. A consensus statement on critical thinking in nursing. *J Nurs Educ,* 39**,** 352-9.

SCHNITTKER, R., MARSHALL, S., HORBERRY, T. & YOUNG, K. 2019. Decision-centred design in healthcare: The process of identifying a decision support tool for airway management. *Appl Ergon,* 77**,** 70-82.

SCHWANDT, T. A. 1994. Constructivist, interpretivist approaches to human inquiry. *Handbook of Qualitative Research,* 1**,** 118-137.

SHAKESPEARE, P. 2003. Nurses' bodywork: Is there a body of work? *Nurs Inq,* 10**,** 47-56.

SIMMONS, B. 2010. Clinical reasoning: Concept analysis. *J Adv Nurs,* 66**,** 1151-8.

SIMMONS, B., LANUZA, D., FONTEYN, M., HICKS, F. & HOLM, K. 2003. Clinical reasoning in experienced nurses. *West J Nurs Res,* 25**,** 701-19; discussion 720-4.

SIPIYARUK, K., GALLAGHER, J. E., HATZIPANAGOS, S. & REYNOLDS, P. A. 2018. A rapid review of serious games: From healthcare education to dental education. *Eur J Dent Educ,* 22**,** 243-257.

SMITH, J. & FIRTH, J. 2011. Qualitative data analysis: The framework approach. *Nurse Res,* 18**,** 52-62.

SMITH, P. 1992. *The emotional labour of nursing: Its impact on interpersonal relations, management and the educational environment in nursing*, Macmillan.

SMITH, P. 2012. *The emotional labour of nursing revisited : Can nurses still care?,* Basingstoke, Palgrave Macmillan.

SMITH, P. & GRAY, B. 2001a. Emotional labour of nursing revisited: Caring and learning 2000. *Nurse Educ Pract,* 1**,** 42-9.

SMITH, P. & GRAY, B. 2001b. Reassessing the concept of emotional labour in student nurse education: Role of link lecturers and mentors in a time of change. *Nurse Educ Today,* 21**,** 230-7.

SRIVASTAVA, A. A. T., S BRUCE 2009. Framework analysis: A qualitative methodology for applied policy research. *Journal of Administration and Governance,* 4**,** 72-79.

STACEY, G., POLLOCK, K. & CRAWFORD, P. 2015. A case study exploring the experience of graduate entry nursing students when learning in practice. *J Adv Nurs,* 71**,** 2084-95.

STADEN, H. 1998. Alertness to the needs of others: A study of the emotional labour of caring. *J Adv Nurs,* 27**,** 147-56.

STALEY, K. 2009. *Exploring impact: Public involvement in nhs, public health and social care research*, National Institute for Health Research.

STAYT, L. C. 2009. Death, empathy and self preservation: The emotional labour of caring for families of the critically ill in adult intensive care. *J Clin Nurs,* 18**,** 1267-75.

STEVENS, K. R. 2013. The impact of evidence-based practice in nursing and the next big ideas. *Online J Issues Nurs,* 18**,** 4.

SUJAN, M., POZZI, S. & VALBONESI, C. 2017. Reporting and learning: From extraordinary to ordinary. *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

SUJAN, M., SPURGEON, P. & COOKE, M. 2015a. The role of dynamic trade-offs in creating safety—a qualitative study of handover across

care boundaries in emergency care. *Reliability Engineering & System Safety,* 141**,** 54-62.

SUJAN, M. A., SPURGEON, P. & COOKE, M. W. 2015b. Translating tensions into safe practices through dyanmic trade-offs: The secret second handover. *In:* WEARS, R., HOLLNAGEL, E. & BRAITHWAITE, J. (eds.) *Resilient health care: The resilience of everyday clinical work.* Farnham, Surrey: Ashgate.

SULLIVAN, J. R. 2012. Skype: An appropriate method of data collection for qualitative interviews? *The Hilltop Review,* 6**,** 54-60.

SWALLOW, V., NEWTON, J. & VAN LOTTUM, C. 2003. How to manage and display qualitative data using 'framework'and microsoft® excel. *Journal of Clinical Nursing,* 12**,** 610-612.

THE MID STAFFORDSHIRE NHS FOUNDATION TRUST PUBLIC INQUIRY. FRANCIS, R. 2013. Report of the mid staffordshire nhs foundation trust public inquiry. Volume 1: Analysis of evidence and lessons learned (part 1).

THE STANDING NURSING AND MIDWIFERY ADVISORY COMMITTEE 1955. The work of nurses in hospital wards. Edinburgh, Scotland: Nuffield Provincial Hospitals Trust.

THEODOSIUS, C. 2008. *Emotional labour in health care: The unmanaged heart of nursing*, Routledge.

THORNE, S. 2008. *Interpretive description*, Left Coast Press, Inc. .

THORNE, S., KIRKHAM, S. R. & MACDONALD-EMES, J. 1997. Interpretive description: A noncategorical qualitative alternative for developing nursing knowledge. *Res Nurs Health,* 20**,** 169-77.

THORNE, S., KIRKHAM, S. R. & O'FLYNN-MAGEE, K. 2004. The analytic challenge in interpretive description. *International Journal of Qualitative Methods,* 3**,** 1-11.

TIMMING, A. R. 2016. The effect of foreign accent on employability: A study of the aural dimensions of aesthetic labour in customer-facing and non-customer-facing jobs. *Work, Employment and Society,* 31**,** 409-428.

TIMMONS, S. & TANNER, J. 2005. Operating theatre nurses: Emotional labour and the hostess role. *Int J Nurs Pract,* 11**,** 85-91.

TRAYNOR, M. 2017. *Critical resilience for nurses: An evidence-based guide to survival and change in the modern nhs*, Taylor & Francis.

TRAYNOR, M., STONE, K., COOK, H., GOULD, D. & MABEN, J. 2014. Disciplinary processes and the management of poor performance among uk nurses: Bad apple or systemic failure? A scoping study. *Nurs Inq,* 21**,** 51-8.

TRICCO, A. C., LILLIE, E., ZARIN, W., O'BRIEN, K., COLQUHOUN, H., KASTNER, M., LEVAC, D., NG, C., SHARPE, J. P., WILSON, K., KENNY, M., WARREN, R., WILSON, C., STELFOX, H. T. & STRAUS, S. E. 2016. A scoping review on the conduct and reporting of scoping reviews. *BMC Med Res Methodol,* 16**,** 15.

TRICCO, A. C., LILLIE, E., ZARIN, W., O'BRIEN, K. K., COLQUHOUN, H., LEVAC, D., MOHER, D., PETERS, M. D. J., HORSLEY, T., WEEKS, L., HEMPEL, S., AKL, E. A., CHANG, C., MCGOWAN, J., STEWART, L., HARTLING, L., ALDCROFT, A., WILSON, M. G., GARRITTY, C., LEWIN, S., GODFREY, C. M., MACDONALD, M.

T., LANGLOIS, E. V., SOARES-WEISER, K., MORIARTY, J., CLIFFORD, T., TUNCALP, O. & STRAUS, S. E. 2018. Prisma extension for scoping reviews (prisma-scr): Checklist and explanation. *Ann Intern Med,* 169**,** 467-473.

VAISMORADI, M., SALSALI, M. & AHMADI, F. 2011. Nurses' experiences of uncertainty in clinical practice: A descriptive study. *J Adv Nurs,* 67**,** 991-999.

VAN DONGEN, E. & ELEMA, R. 2010. The art of touching: The culture of 'body work' in nursing. *Anthropology & Medicine,* 8**,** 149-162.

VON ARX, M., CULLATI, S., SCHMIDT, R. E., RICHNER, S., KRAEHENMANN, R., CHEVAL, B., AGORITSAS, T., CHOPARD, P., BURTON-JEANGROS, C. & COURVOISIER, D. S. 2018. "We won't retire without skeletons in the closet": Healthcare-related regrets among physicians and nurses in german-speaking swiss hospitals. *Qual Health Res,* 28**,** 1746-1758.

WADDINGTON, K. 2005. Behind closed doors - the role of gossip in the emotional labour of nursing work. *International Journal of Work Organisation and Emotion,* 1**,** 35-47.

WARD, D. J., FURBER, C., TIERNEY, S. & SWALLOW, V. 2013. Using framework analysis in nursing research: A worked example. *Journal of Advanced Nursing,* 69**,** 2423-2431.

WARHURST, C. & NICKSON, D. 2007. Employee experience of aesthetic labour in retail and hospitality. *Work, Employment and Society,* 21**,** 103-120.

WEARS, R. & HUNTE, G. S. 2017. Resilient procedures: Oxymoron or innovation? *In:* BRAITHWAITE, J., WEARS, R. & HOLLNAGEL, E. (eds.) *Resilient health care: Reconciling work-as-imagined and work-as-done.* London: Taylor & Francis.

WEARS, R., SCHUBERT, C. C. & HUNTE, G. S. 2015. Individual-collective trade-offs: Implications for resilience. *In:* WEARS, R. L., HOLLNAGEL, E. & BRAITHWAITE, J. (eds.) *Resilient health care volume 2: The resilience of everyday clinical work.* Farnham, Surrey: Ashgate.

WEARS, R., SUTCLIFFE, K. M. 2015. Safety, error, and resilience: A meta-narrative review. Resilience Engineering Association.

WEAVER, K. & OLSON, J. K. 2006. Understanding paradigms used for nursing research. *J Adv Nurs,* 53**,** 459-469.

WEIR, H. & WADDINGTON, K. 2008. Continuities in caring? Emotion work in a nhs direct call centre: Feature. *Nurs Inq,* 15**,** 67-77.

WELFORD, C., MURPHY, K. & CASEY, D. 2011. Demystifying nursing research terminology. Part 1. *Nurse Res,* 18**,** 38-43.

WESTBROOK, J. I., DUFFIELD, C., LI, L. & CRESWICK, N. J. 2011. How much time do nurses have for patients? A longitudinal study quantifying hospital nurses' patterns of task time distribution and interactions with health professionals. *BMC Health Services Research,* 11**,** 1-12.

WILSON, T., HOLT, T. & GREENHALGH, T. 2001. Complexity and clinical care. *BMJ,* 323**,** 685-688.

WOLF, L. D., POTTER, P., SLEDGE, J. A., BOXERMAN, S. B., GRAYSON, D. & EVANOFF, B. 2006. Describing nurses' work: Combining quantitative and qualitative analysis. *Hum Factors,* 48**,** 5-14.

WOLF, Z. R. & ZUZELO, P. R. 2006. “Never again” stories of nurses: Dilemmas in nursing practice. *Qual Health Res,* 16**,** 1191-1206.

WOODS, D. D., HOLLNAGEL, E. 2006. Prologue: Resilience engineering concepts. *In:* HOLLNAGEL, E., WOODS, D. D. & LEVESON, N. (eds.) *Resilience engineering: Concepts and precepts* Hampshire: Ashgate Publishing, Ltd.

WORLD BANK. n.d. *How does the world bank classify countries?* [Online]. Available: https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries [Accessed June 6, 2019].

WU, X., LI, J., LIU, G., LIU, Y., CAO, J. & JIA, Z. 2018. The effects of emotional labor and competency on job satisfaction in nurses of china: A nationwide cross-sectional survey. *Int J Nurs Sci,* 5**,** 383-389.

WUEST, J. 1994. Professionalism and the evolution of nursing as a discipline: A feminist perspective. *Journal of Professional Nursing,* 10**,** 357-367.

YAM, B. M. 2004. From vocation to profession: The quest for professionalization of nursing. *Br J Nurs,* 13**,** 978-82.

YANG, F. H. & CHANG, C. C. 2008. Emotional labour, job satisfaction and organizational commitment amongst clinical nurses: A questionnaire survey. *Int J Nurs Stud,* 45**,** 879-87.

YASSI, A., KHOKHAR, J., TATE, R., COOPER, J., SNOW, C. & VALLENTYNE, S. 1995. The epidemiology of back injuries in nurses at a large canadian tertiary care hospital: Implications for prevention. *Occup Med,* 45**,** 215-220.

9 Appendix A: Combined Narrative of Nursing Labour

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Task assessment	(Goddard, 1953)	The work of nurses in hospital wards	Report	Citation tracing	Empirical	Nurses in 12 hospitals 24 hour observation x1 week per ward Total 15,729 hours	What is the proper task of a nurse?	-List of tasks does not adequately reflect nursing work, as some work is beyond measurement -Male and female nurses do the same work -Time spent 60% nursing, 23% organisation, 17% domestic work -Nursing work is basic (care needed for all patients, i.e. washing, feeding) and technical (disease specific care, such as catheters) -Domestic labour is both heavy/light cleaning -Sicker patients need more care than others, and patients receive less care when the ward is short-staffed -Nursing students do the bulk of the work, and the ward sister supervises/manages care -The more senior the nurse, the more administrative work they do -Nurses do poultices and medications, and delegate other work to students and orderlies -It is dangerous for an untrained person to respond to a patient -There is little time to build relationships with patients

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Moores and Moult, 1979a)	Patterns of nurse activity	Journal article	Citation tracing	Empirical	Nurses on medical/surgical wards Quantitative observation. Nurses' activity recorded at 3-minute intervals. 10,000+ hours observation.	How do nurses spend their time?	-Drew on Goddard's (1953) classifications of basic, technical, administrative work -Time divided approximately half with patients, half away from bedside -Less senior nurses did more 'basic' work, more senior nurses did more administrative work -Less technical labour completed than expected -Periods of high intensity at different times of day
	(Battisto et al., 2009)	Using a task analysis to describe nursing work in acute care patient environments	Journal article	Hand searching	EBP	Nurses in hospitals Task analysis of nursing in patient rooms, textbook review,	What is the work of a nurse in an acute care environment? To inform a human factors	-Hospital rooms are not designed empirically. Focus on individual devices -Nursing work most physically intensive in hospitals -Activities identified as: administering medication, assessing patients, assisting patients, breaks, organising, communication, documentation, movement, other -Documentation most common, 25% of nurses' time -Most tasks located at bedside, and also most

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
						observation, interviews	room design	problems -Computer is most common piece of equipment
	(Westbrook et al., 2011)	How much time do nurses have for patients? A longitudinal study quantifying hospital nurses' patterns of task time distribution and interactions with health professionals	Journal article	Hand searching	EBP	Hospital nurses (57) Prospective observational study	Understand how nurses distribute time across tasks, and any changes over 2-year period	-Nursing tasks identified: direct care, indirect care, medication, documentation, communication, ward-related activities, in-transit, supervision, social/breaks, other -Nurses spent 37% of their time with patients, approx. 20% in direct care -Completed 72.3 tasks per hour, with communication and medication as most common -Changed tasks every 55 seconds (avg). Interruption every 32 minutes. 'Switch cost' occurs for each change -Time spent on tasks stable over time
	(Lavander et al., 2016)	Working time use and division of labour among nurses and health-care	Journal article	Medline	EBP	Systematic review	Synthesise evidence on division of labour and time use	-Working time spent in 28 categories, including: direct care, indirect care, documentation, unit-related work, personal time, non-nursing work -Documentation constituted largest percentage at 35%

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
		workers in hospitals - a systematic review					among nurses	-Nurses moving away from bedside and delegating patient care to other providers -Nurses' time use influenced by socio-cultural expectations of nurses
Modelling	(Moores and Moult, 1977)	Sources of variation in the pressure of work index in thirty hospital wards	Journal article	Citation tracing	Empirical	Comparison of 3 hospitals Statistical analysis of work intensity	Does the daytime workload in hospitals vary?	-There is a high degree of variability in the intensity of work, from week to week (Hospitals A and C) and day to day (Hospital B) -Some wards display spare capacity, and have a higher mean matching between variability and staff availability
	(Moores and Moult, 1979b)	The relationship between the level of nurse staffing and the patterns of patient care and staff activity	Journal article	Citation tracing	Empirical	Nurse/patient interaction Observation on 20 wards across 3 hospitals	How does nursing staffing impact patient care patterns?	-Direct, positive relationship between number of staff and amount of care patient receives -Additional nurses available leads to more patient care, with no visible ceiling -About half of nurses' time is patient facing, half away from patients -Patients saw between 3-10 nurses per day

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(James, 1992)	Care = Organisation + physical labour + emotional labour	Journal article	Citation tracing	Interpretive	Discussion of findings from PhD on hospice nurses, and homemakers	How do nurses enact 'carework' in a hospice?	-Formula reflects the work observed -'Care' is done by a wide variety of people, culturally and politically shaped -Nursing is care in a workplace, with an illness frame -Almost called organisation 'mental labour' but felt it had Marxist connotations -Also recognised managerial work -Physical tasks seen as 'real work', as they are a visible demonstration of nursing. Source of judgement from other nurses -Nurses had increased control over tasks (vs. dying patients) so defaulted to tasks as a coping mechanism

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Role	(The Standing Nursing and Midwifery Advisory Committee, 1955)	Response: The work of nurses in hospital wards	Report	Citation tracing	Empirical	Response to report	Response to Job Analysis of the Work of Nurses in Hospital Wards	-Objected to the idea that a minute by minute account of tasks captured the totality of nurses' work. Rigidity of roles/tasks did not fit. -There is a focus on tasks, rather than a comprehensive picture of nursing -Recommendation to shift to team nursing rather than functional nursing model. Development of the concept of patient assignment -Recommended generalist education -Discussion of skill mix and retention issues -Review nursing duties and assess whether they should be done by others, as well as scope of practice relative to medicine -Change documentation to make it faster -Safe staffing an issue on many wards -Adequate equipment needed for nurses -Devised experiment to test models of care

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Hockey, 1977)	The nurse's contribution to care in a changing setting	Journal article	Citation tracing	Interpretive	Discussion paper	What is the nurse's unique contribution to healthcare?	-Nurses see patients as 'whole person', preserve patient dignity -Communicates information, coordinates care, and empathises with patient -Nurse cares for person, rather than treats condition -Nurses' work is context-dependent -Professionalisation efforts have meant putting artificial boundaries around nursing work -Nurses should influence policy-making -Shift from task based allocation to team-based patient allocation -Nurses teach and support patients

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Melia, 1979)	A sociological approach to the analysis of nursing work	Journal article	Citation tracing	Interpretive	Drew on data from Moult (1977) -262 nurses on 50 wards observed, for one day each	Describes the work of nurses on hospital wards	-Nursing work was compared with that of miners, likely to establish credibility -Hospitals characterised as socio-technical systems that are unstable and dynamic -Highlights that Goddard (1953) did not intend a value judgement with terms 'basic' and 'technical', but there was the impact of such a judgement on the prestige of the work -Not possible to create a hierarchy of nurses' skills, because a hierarchy only exists relative to the needs of each patient -Nurses are multiskilled, and worked largely alongside each other, not together -Work is impacted by the environment, as the shape of the ward creates structural divisions of in work -Nurses' work is flexible to cope with a crisis. This flexibility means it is more useful to understand role than tasks

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Pembrey, 1980)	The ward sister - key to nursing: A study of the organisation of individualised nursing	Book	Expert recommendation	Empirical	Ward sisters Observation, checklists, interviews	What is the role of the ward sister in achieving individualised nursing?	-Ward sisters are the key to ward organisation -Some sisters actively manage a ward, while others do not. Some made beds etc. rather than coordinate work. Few assigned specific nurses to patients, thus, individualised nursing did not happen -Role can be the bridge between organisation and ward -Organisational issues cause problems at ward level, which ward sisters attempt to manage, whether they have any control over the issue or not -Top priorities were to do a ward round, report on patients, manage student nurses, and care for patients -Learned from mentors, without formal training process -Further education and experience enabled nurses to do more management of the ward

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Richardson, 1996)	Frontier nursing: Nursing work and training in Alberta, 1890-1905	Journal article	Embase	Interpretive	Historical research Archival and published sources	Analysis of nursing work and education process in pre-Confederation Alberta (Canada)	-Nursing was socially sanctioned employment for women on the frontier. Hospitals were safe and thus attractive places to work -Scarce resources meant that care was restricted to those who 'could be helped' (no mental illness, social problems) -Nurses had a broad scope of practice and high degree of autonomy -Managed hospitals, coordinated logistics, cooking, cleaning, institutional maintenance, nursing management, care of patients, assist doctors -Entrepreneurial models of graduate nurses' work
	(Adams et al., 2000)	Skill-mix changes and work intensification in nursing	Journal article	Hand searching	Interpretive	Nurse managers Semi structured interviews	What effect has restructuring had on the work of nurses?	-Changes in skill mix, scope of practice, student work, managerial work all result in changing nurse roles -Increasingly managerial approach to healthcare as cost savings measure -Professional status (or lack thereof) impacts nurses' self-determination in terms of work role -Nurses educated for broader range of skills, so they can adapt, but job descriptions are unchanged

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								-Roles extended and specialist care developed. Nurses become territorial -Increasing managerial scope, and patient care shunted to unregulated providers -Role change a response to pressures
	(Liaschenko and Peter, 2004)	Nursing ethics and conceptualizations of nursing: Profession, practice and work	Journal article	Medline	Interpretive	Discussion paper	Demonstrate how ethics contributes to nursing as work	-Ethics outlines what kind of work has value -Nurses have fought for professional status, to elevate their role. Autonomy curbed by movement of decision-making to managerial level -Work impacted by crises, not daily routines -Emphasis on autonomy undermines relational nature of work -Isolated activities (i.e. wound care) do not illustrate the value added to care from nursing -'Work' a useful framing for nursing because it does not imply value judgement about various activities -Need an ethics of work that goes beyond nurse-patient relationship
Taboo work	(Bolton, 2005)	Women's work, dirty work: The	Journal article	Hand searching	Critical	Gynaecology nurses Longitudina	What is the meaning of the	-'Women's problems' means that gynaecology is inherently private and 'socially distasteful' (p. 170) -Female nurses feel that they are doing work

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
		Gynaecology nurse as 'other'				l qualitative study	work of a gynaecology nurse?	for women that only other women can do. Becomes symbolic for nurses, as they are the only ones who 'understand' -Community felt set apart from other nurses, and developed their own identity and coping mechanisms -Nurses work in close proximity to 'dirty' and taboo things, i.e. miscarriages -Aware that the public finds the scope of their work uncomfortable and disgusting -Nurses resent people who do not understand, and ostracise/humiliate male physicians (esp. junior doctors)
	(Bishop, 2007)	Doing taboo work: Nurses' experiences of caring for women having second trimester pregnancy terminations for foetal anomalies	Thesis	CINHAL	Interpretive	Ob/Gyn nurses Phenomenological interviews	Understanding nurses' experiences of working during second trimester pregnancy terminations	-Experience of caring for women having pregnancy terminations understood as doing taboo work -Little prior research, as work hidden and not acknowledged -Nurses find their work graphic, and do not feel like they can share what they do. Describe it as difficult and draining, an emotional roller-coaster -Continue to work in this area because they can support women and ease a horrible experience

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
		through labour induction						
	(Capri and Buckle, 2015)	"We have to be satisfied with the scraps": South African nurses' experiences of care on adult psychiatric intellectual disability inpatient wards	Journal article	Medline	Interpretive Qualitative narrative study	Psychiatric intellectual disability nurses	What are African nurses' experiences of intellectual disability nursing?	-Nurses derived job satisfaction from relational work, and connections with patients -Burden of care included difficulty, powerlessness, challenging patient behaviours -Nurses and patients stigmatised and degraded -Fatigue at the system level (staff and resource shortages) and individual level (marginalised, unappreciated, emotionally exhausted). Nurses recognise system falling apart -Inadequate training and support. Nurses wanted someone to talk to about their experiences and recognition for their work
	(Ray, 2016)	'Is this even work?' Nursing care and stigmatised labour	Journal article	Scopus	Critical Ethnography	Indian hospital nurses	Exploration of the nursing labour market and social factors that impact the perceived	-Association with femininity means that nurses remain stigmatised and subordinated, despite economic value of work -Professionalisation made nursing legitimate, if not socially acceptable

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
							value of labour	
Social determinants of nursing work	(Coburn, 1994)	Professionalization and proletarianization: Medicine, nursing, and chiropractic in historical perspective	Journal article	JSTOR	Critical	Discussion paper	Interpretation of the development of nursing, medicine, and chiropody as professions	"-Professionalisation of nursing moved the role up the class scale -Neoliberal efforts towards efficiency have created 'proletarianization' through deskilling and centralised control -Competing pressures visible in separation of different parts of labour to retain class structure (i.e. basic/technical) -Gender further subordinates nursing. Inferiority to medicine was generally unchallenged so that physicians would not oppose role -Professions struggle for control, which is visible in animosity between similar groups -Education, unionisation gave nursing relative prestige -Productivity efforts meant that nursing jobs were delegated to other roles i.e. orderlies, cleaners"

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Brennan , 2005)	The social construction of nurses' work: Nursing labour and status	Journal article	Scopus	Critical	Discussion paper	Historical devaluation of women's work leads to nursing being low status work	-Nursing care established as physician led, and bio-medical in nature, to establish credibility -Virtue narratives of vocation no longer carry social weight for nurses -Emphasis on consistency of work between patients and across practitioners -Nurses need to consider what role they want re: physicians and patients -Work continues to be devalued. Highest status nurses are ones who do not provide patient care
	(Quance, 2007)	The social organisation of nurses' labour pain work	Thesis	CINHAL	Critical	Labour and delivery nurses Institutional ethnography	How does nurses' labour pain work change depending on different factors (i.e. presence/absence of	-Nurses' work with women in labour is complex and individualised. Relational work is invisible in documentation, and thus, to the organisation -Care is moving increasingly from nurses' support to analgesia administration. Enforced by evidence-based models that focus on medical management -Epidurals create a shift between intense, unpredictable work to controlled, technical work -Physicians' practices impact nurses' pain management work. Nurses must know

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
							an epidural)	physician preferences and 'sell' the interventions the mother wants
	(George, 2008)	Nurses, community health workers, and home carers: Gendered human resources compensating for skewed healthcare systems	Journal article	Embase	Critical	Review- 534 articles	What are the experiences of nurses, using gendered analysis?	-Gender determines how much one's work is valued. Women up to 85% of health workforce -Unrecognised as an issue in many non-OECD countries -Status of person performing care determines significance, not contribution -Unequal education undermines roles -Delegation of medical tasks seen as a loss of power -Nurses take on extra responsibilities to make sure patient care does not suffer, at personal expense
	(Myny et al., 2011)	Non-patient direct care factors influencing nursing workload: A review of the literature	Journal article	Hand searching	EBP	Integrative review	What non-patient factors influence nursing workload?	-Staffing levels, skill mix, patient and family characteristics, interruptions/pace of work, perception of workload all impactful -Factors influence workload at an individual, team, and system level

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Bogossian et al., 2014)	"The pure hard slog that nursing is…": A qualitative analysis of nursing work	Journal article	Hand searching	Interpretive	Nurses from 3 countries Longitudinal, web-based study	Explore nurses' perceptions of their work, and why nurses leave the profession	-Workload, shift work, violence, and remuneration all factors why nurses leave the profession -Universal concern workload has increased, as has complexity. Felt they were too busy to care for patients -Perceived constant media criticism for poor care, despite lack of support and resources -Work consistently described as "hard" -Shift work negatively impacted health and life outside of work, especially as nurses aged. Left roles because of a lack of child care -Violence from colleagues and the public viewed as endemic, unavoidable -Pay does not compensate for the difficulty of the work, and nurses leave for easier, better paid jobs -Nurses deciding, it's just not worth it

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Hart and Warren, 2013)	Understanding nurses' work: exploring the links between changing work, labour relations, workload, stress, retention and recruitment	Journal article	Scopus	Interpretive	Hospital and community nurses (12) Qualitative interview study	What is nurses' work, as they see it, in the context of labour relations, workload, stress, retention, and recruitment?	-Nurses want to help people and enjoy working with patients. They become frustrated when organisational barriers prevent them from doing so. -Staff shortages were identified as having a major impact on nurses' work intensification -Scope of role changes with short staffing, as nurses are required to fill gaps -Staying late impacts family life negatively -Nurses make personal sacrifices, rather than have patient care suffer -Nurses perceive a generational gap in standards of care -Nurses felt more documentation, new procedures, patient demands, and scarce resources negatively impacted their work

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Kowalchuk, 2016)	Nurses' labour conditions, gender, and the value of care work in post-neoliberal El Salvador	Journal article	Scopus	Critical	Working and student nurses Field visits with focus groups and observations	What is the impact of increased investment in nursing after a period of neo-liberal austerity?	-Changes in government reversed austerity, with increased funding for healthcare, and increased emphasis on primary care -Devaluation of nursing work based on gender -Work intensification was caused by staffing deficits, including time spent at work, and energy expenditure. This jeopardised patient welfare, distressing nurses -Restoration of funds has led to new areas opening, but not adequate staffing of existing areas -Wide scope of practice. Nurses expected to fix equipment, in lieu of other staff -Increased temporary contracts, precarity of positions. Drain to private system for better pay, as public wages cannot support families-Reversal of austerity has improved some areas, but legacy persists

Theme	Author/ Year	Title	Type	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Kowalchuk, 2018)	Patriarchy, new left post-neoliberalism, and the valuing of care work: The labour conditions of Nicaraguan nurses under Sandinismo's 'Second Stage'	Journal article	Scopus	Critical	Working nurses Interviews and focus groups	How have economic and policy changes re: healthcare impacted nurses in Nicaragua?	-Reversal of neoliberal policies has not improved working conditions -Nursing is marginalised because of gender, worsening the conditions for the profession. Caring seen as innate, not learned -Nurses look for work in private system, or elsewhere. Work intensifies for those who do not leave -Salaries lowest in Latin America, have not improved with reforms. Most nurses work 2 jobs. Spending on physicians' salaries and infrastructure. Collective action limited. -Long hours/workload have left many nurses single mothers- husbands leave -Patient expectations exceed nurses' capacities

10 Appendix B: Physical Labour Meta-Narrative

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Impact of physical work upon nurses	(Engels et al., 1994)	Physical work load and its assessment among the nursing staff in nursing homes	Journal article	Hand searching	EBP	Female nurses in nursing homes Observational study	What are the task-specific contributions to nurses' daily workloads?	-Nurses spent most of their time on preparatory activities (i.e. getting towels before a wash), followed by administration -25% of time of nurses' time spent in bent or twisted postures -85% of time standing or walking -Variation across 24 hours. Days had most administration, evenings most patient care -Mean HR during shift 103 bpm -Difficult to assess tasks as nurses often did more than one thing at a time -Interruptions every 1-4 min
	(Jungbauer et al., 2005)	Characteristics of wet work in nurses	Journal article	Embase	EBP	Randomly selected nurses in acute care hospital Quantitative observation	What are the characteristics of exposure of wet work in nurses? With implications for hand dermatitis	-Handwashing and glove use place nurses at risk for dermatitis -4% of nurses had hand dermatitis -Wet worked varied by ward, with intensive care having the highest at 25% of work -Nurses' hands wet 30-49 times per shift -Recommend wearing gloves while washing, and avoiding excess handwashing

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Caroe et al., 2018)	Hand eczema and wet work: dose-response relationship and effect of leaving the profession	Journal article	Embase	EBP	Descriptive study of staff, from database. Follow up self-report questionnaires.	Assess dose-response relationship of wet work and hand eczema, and impact of eczema on job change	-Wet work defined as hands wet >2 hrs or gloves >2 hrs or handwashing >20 times per day -42.5% of healthcare professionals had hand eczema -Marked improvement for people who changed jobs -Dose/response relationship to improved hand eczema and decreased wet work
Nurses' Sensorium	(Hockey and Allen-Collinson, 2009)	The sensorium at work: The sensory phenomenology of the working body	Journal article	Hand searching	Interpretive	Discussion paper, phenomenological lens	Explore the lived sensory experience of working bodies	-Lack of attention to how it feels to use one's senses in a paid capacity -Majority of study of bodily work done in nursing and feminised professions -Senses are central to work as they mediate the relationship between the nurse, patient, and environment -Sensory work taken for granted -Movement, timing, dexterity all expert aspects of work, i.e. using surgical instruments -Awareness of own and others' condition, i.e. how fast both are breathing, colour of fluids -Nurses regulate expression in spite of negative

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								sensory input like smell -Pts bodies become the working space of nurses
	(Dresser, 2012)	The role of nursing surveillance in keeping patients safe	Journal article	Hand searching	Empirical	Discussion paper	Concept overview of nurse surveillance	-Surveillance is a caring intervention to prevent errors and detect problems -Process for monitoring and acting upon patient indicators -Occurs continuously, and patient status is compared to previous status and expected outcomes
	(Donetto et al., 2017)	Nursing work and sensory experiences of hospital design: A before and after qualitative study following a move to all-single room	Journal article	Hand searching	EBP	Hospital nurses Mixed methods, photos and interviews	What are the sensory aspects of nurses' embodied work?	-Natural experiment of a hospital transfer from 'Nightingale Wards' to single-room accommodation -New environment changed how nurses/patients could see and hear each other, and nurse interaction -Nurses disliked decreased surveillance of patients and disrupted communication between staff -Nurses reported decreased awareness of the environment and ward context -Difficult to assess when nurses needed help -Limited social interaction among nurses

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
		inpatient accommodation						
Social Meaning of Nurses' Bodies	(Lawler, 1991)	Behind the screens: Nursing, somology, and the problem of the body	Book	Expert recommendation	Interpretive	Nurses in a hospital Ethnography- observations, 34 interviews	How do nurses manage their interactions with another person's body?	-Somology is the study of caring for the body -Nurses engage with taboos like excreta, genitals, dead bodies, and dirty work -Bodies have inherent sexuality, which nurses navigate to give care. The sex of the person giving and the person receiving care changes the work of the nurse, because of social norms and expectations -Social negotiation is needed to manage patient discomfort and embarrassment, while doing private care -Social attitudes toward the body and gendered work are magnified/revealed in a hospital setting -The role of the body in nursing work has been taken for granted or ignored

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Savage , 1997)	Gestures of resistance: The nurse's body in contested space	Journal article	Hand searching	Critical	1- year Ethnography of nurse-patient relationship and professional autonomy on a single ward	How do nurses' postures reflect the gendered nature of professions and space?	-Nurses' body postures changed to reflect different types of interaction -Relaxed postures with other nurses and with patients (in 'private' spaces). In contrast, ‘masculine' postures with physicians, in 'public' spaces -Postures were a means of nurses asserting control of their practices -Postures meant that nurses were not sexually objectified by patients, as they used a family-like approach
Body work	(Van Dongen and Elema, 2010)	The art of touching: the culture of 'body work' in nursing	Journal article	Hand searching	Critical	Psychiatric ward Ethnographic study	What is the meaning of touch for nurses and how does it relate to sense of self?	-Touch is both a technical and an emotionally intimate activity, impacted by socio-cultural norms -Meaning of touch overlooked as it is delegated to aids -Touch is significant and emotional for nurses, not only patients -Boundaries and relationships communicated through touch. Nurses' touching may violate norms (i.e. inserting a urinary catheter), which nurses must manage -Degree of touch reflects nursing's status as lower than that of physicians -Increased use of machines and aids decreases

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								contact with patients -Touch may be difficult for nurses, based on their personal experiences. Not a neutral activity
	(Shakespeare, 2003)	Nurses' bodywork: Is there a body of work?	Journal article	Hand searching	Critical	Discussion paper	How is nursing body work understood?	-Nurses' uses of their own bodies are integral parts of their work -Body work is skilled, but taken for granted -Reports problematise, directly address, or infer the presence of body work -4 narratives: corporate/regulatory, relational, instrumental, and subspecies of human bodies -Corporate/regulatory: nurses' backs, senses i.e. hearing alarms -Relational: posture, touch, body language -Instrumental: practical tasks -Subspecies: embodiment of gender, illness, abuse of one's body -Relatively little study of bodies and nursing

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Gimlin, 2007)	What is 'body work'? A review of the literature	Journal article	Hand searching	Critical	Discussion paper	Overview of different forms of body work	-Body work includes work on one's own body, the bodies of others, modification of bodies, and the management of bodily display -Body often implied in discussions of work. Rarely addressed directly, perhaps because of virtues associated with logic -Ability to do body work sold both to the employer and by the employer -Nurses tend to perform labour 'on behalf of' or 'on' others' bodies -Distancing techniques used to normalise dirty work, such as gloves, image of uniforms, demeanour, humour -Emotional labour also requires body work, i.e. controlling one's face, posture -Work has consequences for bodies, to be managed, i.e. back problems

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Cohen, 2011)	Time, space and touch at work: Body work and labour process (re)organisation	Journal article	Hand searching	Critical	Discussion paper	How does embodied health work relate to labour process organisation?	-Bodies of nurses and patients resistant to 'efficiency savings' as they cannot be modified [generally] -The more a body is required for work, the more resistant said work is to restructuring or change i.e. nursing harder to change than research labs -Healthcare subject to market influences of austerity, savings, targets, audits etc. These do not apply to body work easily -Ratios of bodies working to bodies worked upon (nurses to patients) means labour cannot be changed incrementally -Requirement for nurses' presence close to patients means little workforce adaptation possible. Cannot feed someone and wash another -Nature of bodies makes standardisation of care almost impossible

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Draper , 2014)	Embodied practice: Rediscovering the 'heart' of nursing	Journal article	Hand searching	Critical	Discussion paper	An exploration of the significance of embodiment in nursing	-Body work comparatively neglected by researchers. Focus on disruption of bodies by illness -Embodiment refers to the use of the whole body to make meaning in a relationship [with patients] -Touching patients increasingly being delegated or replaced by technology -Illness alters body's normal boundaries, physically and socially -Calls for re-emphasis on embodiment in nursing work

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Touch	(McCann and McKenna, 1993)	An examination of touch between nurses and elderly patients in a continuing care setting in Northern Ireland	Journal article	Hand searching	Interpretive	Nurses/patients in continuing care Non-participant observation, semi-structured interviews.	What is the amount and type of touch patients receive, and how is this touch perceived?	-Social position of nurses gives license to touch patients at will -Instrumental touch is performing a care act, i.e. wash a patient (96%) -Expressive touch is spontaneous and intended to be comforting (4%) -Illness increases one's need for touch, and may decrease the comfort with touching -Comfort with touch depended on body part, with patients most comfortable with arm or hand, and least comfortable with leg or face -Instrumental touch is accepted, as patients recognise need for care -Expressive touch made many patients uncomfortable. Likely that patients misunderstood intention -Preference for touch varies by individual. Patients may be uncomfortable but unable to step away etc.

11 Appendix C: Emotional Labour Meta-Narrative

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Concept development	(McFarlane, 1976)	A charter for caring	Journal article	Citation tracing	Interpretive	Discussion paper	Interpret the Royal College of Nursing Charter as being about caring	-Caring is not exclusive to nursing, but it is the central work of nurses -Nursing is a versatile, changing role -Caring keeps nurses from being 'technicians' -Goddard (1953) critiqued as associating 'basic' nursing with being easy, and 'technical' nursing with being difficult -Nursing is skilled work, which must be learned -Advocate for the development of different specialties in nursing
	(Hochschild, 1983)	The managed heart: Commercialization of human feeling	Book	Experts	Interpretive	Flight attendants, bill collectors Observation	How do people regulate their emotions for a commercial purpose?	-Commodified, managed emotions -Act to create a desired public display and environment (safety). -3 requirements: contact with the public, employee produces an emotional state in the customer, organisations have a measure of control over employees' emotional displays -Deep acting- where a person tries to feel/create and emotion. Surface acting- when one projects something other than

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								what they feel. -Emphasis on smiling and external displays, which may be contrary to true feelings -People struggle with feeling false/inauthentic with external displays -'Who' is expected to do emotional labour reflects power dynamics of men/women, employee/employer etc. -Emotional labour can take a toll on its performers. People need opportunities to address true emotions
	(James, 1989)	Emotional labour: Skill and work in social regulation of feelings	Journal article	Expert recommendation	Critical	Hospice workers Observation	What is emotional labour, as women's work?	-Emotional labour the labour of dealing with the feelings of others -Less emphasis on being paid, acknowledging unpaid work i.e. domestic labour has emotional labour -Women 'subordinated as unskilled and stigmatised as emotional' (p. 15) -Emotional labour expected, but not recognised or taught -Capitalist purpose, as women's emotional labour supports men's [paid] physical labour -To complete emotional labour, must a)

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								understand the needs of others b) have personal response c) manage balance of interests d) be able to pace this work according to need, and be flexible -Not recognised, including by women themselves
	(Smith, 1992)	The emotional labour of nursing: Its impact on interpersonal relations, management and the educational environment in nursing	Book	Experts	Critical	Hospital nurses and nursing students Questionnaires, observation and interviews	How do nurses learn emotional labour, and what are the impacts of emotional labour on nurses?	-Emotional labour is work, requiring skill and resources -Nurses manage their emotions so that patients feel cared for -Acceptable emotional displays linked to gender and racial expectations. Senior nurses do less emotional labour -Nurses projected feelings contrary to what they felt, to create a therapeutic environment, i.e. disguising panic so as not to alarm patient -Emotional labour not taught or counted in workload measurement
	(Theodosius, 2008)	Emotional labour in healthcare: The unmanaged	Book	Experts	Interpretive	Inpatient surgical ward Participant observation,	What is the nature of emotional labour in nursing? Emphasis on	-Emphasis on emotional labour as a sociological concept -Emotional labour (lower status work) pushed out by high levels of physical labour -Increasing customer service model in

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
		heart of nursing				audio diaries, and reflexive writing	sociological aspect of concept	healthcare is changing emotional labour expectations -4 types: therapeutic (between nurses and patients), collegial (nurses and other professionals), instrumental (related to a clinical intervention), reflexive (own identity) -Managed emotions cause physical signals for nurses, such as heart pounding -Emotional labour impacted by power and role in clinical setting
Scales	(Brotheridge and Lee, 2003)	Development and validation of the emotional labour scale	Journal article	Hand searching	Empirical	Tool creation and validation	Development and testing of emotional labour scale	-15 item self-report questionnaire, asking about emotional display, duration, and acting -Surface acting associated with emotional exhaustion
	(Picardo et al., 2013)	The Spanish version of the emotional labour scale: A validation study	Journal article	Embase	Empirical	Tool translation and validation	Validate a translation of Brotheridge's 2003 scale	-Translation valid
	(Brumit and	Accuracy of the Spanish	Journal article	Embase	Empirical	Commentary	Response to Picardo's paper	-English and Spanish versions of the emotional labour scale need to be

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	Glenn, 2013)	emotional labour scale						presented together to allow for direct comparison
Emotional labour as gift	(Bolton, 2000)	Who cares? Offering emotional work as a 'gift' in the nursing labour process	Journal article	Medline	Interpretive	Gynaecology nurses Longitudinal, qualitative study	Explore altruism as related to emotional labour	-Nurses enact caring outside of organisational or professional expectations. Altruism separate from emotional labour as it is a true reflection of identity -Some emotional displays outside the market/labour realm, here called 'gifts' -Nurses claim caring as their central purpose. Emotional involvement with patients is rewarding and stressful -Emotional work amongst colleagues is reciprocated, but there is not such expectation with patients -Working with dead babies extremely difficult but nurses recognise it helps grieving women and is 'worth the trauma' (p. 585) -Taboo nature of work makes peer support i.e. humour more valuable

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Lopez, 2006)	Emotional labour and organized emotional care: Conceptualizing nursing home care work	Journal article	Scopus	Interpretive	Nursing home staff Ethnography	Organised emotional care as a complement to emotional labour	-Observed facility did not create 'feeling rules' for staff to follow. Rather, they supported meaningful interaction with residents -Difference between enforced managerial expectations and genuine interactions, creating 'organised emotional care' -Nurses have agency in how they apply emotional labour. Not a rote following of rules -Some organisational norms meant tolerating abuse and manipulation without responding negatively, or questioning behaviour -Emphasis on routine/procedure versus patient autonomy impacted nurses' emotional labour
	(McClure and Murphy, 2007)	Contesting the dominance of emotional labour in professional nursing	Journal article	Hand searching	Critical	Discussion paper	Challenge the utility of current definitions of emotional labour and their use in nursing	-Emotional labour reflects the commodification of a once-private aspect of self. Distinction is made with emotion work, which is unwaged. These distinctions not made widely in literature. Terms not interchangeable. -Not all emotional labour is forced or fake. Nurses have authentic emotional

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								exchanges with patients. Current literature excludes companionship -Emotional labour use in nursing is synonymous with caring, but this is not fitting with Hochschild's original definition -Advocate 'emotional work' to have broader remit than negativity of 'emotional labour'
	(Adams and Sharp, 2013)	Reciprocity in caring labour: Nurses' work in residential aged care in Australia	Journal article	Scopus	Critical	Literature review, data from 2 qualitative studies	Professional reciprocity-concept development	-Care labour distinct from other types as it involves relationship and reciprocity -Caring labour is both instrumental (i.e. giving medications) and communicative (i.e. support). Instrumental is commodified, while communicative is not. Can do both simultaneously. -Care labour based on both what the giver can give, and the receiver can afford -Concept of professional reciprocity: deliberate and skilled relational work of paid care workers resulting in shared meanings with care recipients. Recipient feels cared for, and carer derives job satisfaction (p. 107) -Relationships especially important for people in long-term care or with long-term

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								healthcare needs -Skilled work, not reflective of innate [feminine] caring -Reciprocal exchanges allow nurses to achieve a variety of therapeutic goals -Built over time, through continued interaction and awareness of feelings
Emotional Labour	(Phillips, 1996)	Labouring the emotions: Expanding the remit of nursing work?	Journal article	Medline	Critical	Discussion paper	How does emotional labour fit in nursing, with an increase in technology use/procedures ?	-Emotional labour is always present when working with people -Helps nurses remain person-centred, not task focused -Can be both for primary therapeutic purpose, and to manage patient reactions to limit distress (to procedures, information) -Limitations in inability to quantify emotional labour, and recognise genuine displays from acting
	(Staden, 1998)	Alertness to the needs of others: A study of the emotional labour of caring	Journal article	Hand searching	Interpretive	Hospital nurses Phenomenological case studies	Understand nurses' experiences of emotional labour	-Despite role changes, nurses continue to emphasise caring as the foundation of their work -Categories: public/private spheres- nurses deal with the consequences of work-related emotional labour at home, and vice versa -Appearing caring: had to present as a good nurse to meet patient expectations.

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								Uniform supported this presentation -Nurses are human too: expectations of nurses being superhuman, i.e. never crying or annoyed -Giving of yourself: connectedness, not only displaying false feelings -Value and visibility: nurses value their work but others do not see/value it -Coping: emotional labour is hard and nurses must manage their output
	(Kelly et al., 2000)	Death, dying, and emotional labour: Problematic dimensions of the bone marrow transplant nursing role?	Journal article	Embase	Interpretive	Discussion paper	Explore emotional labour of bone marrow transplant nurses	-BMT nursing intense, and potentially high emotional burden, especially related to unsuccessful BMTs -Efforts to create 'normality' around cancer require a great deal of emotional labour -Population would benefit from additional research

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Henderson, 2001)	Emotional labour and nursing: An under-appreciated aspect of caring work	Journal article	Scopus	Interpretive	UK/ Canadian nurses who work with abused women Qualitative interviews	What drives individual nurses' engagement/detachment with emotional labour?	-Nurses may disengage from emotional labour to protect themselves. Others value objectivity -Spectrum of engagement and detachment in nurses -When nurses were more self-reflexive, they could engage more with patients. Some used their emotions to guide their practice -Nurses felt education had failed them re: emotional labour (or perhaps, they had not appreciated its significance until post-qualification)
	(Smith and Gray, 2001b)	Reassessing the concept of emotional labour in student nurse education: Role of link lecturers and mentors in a time of change	Journal article	Hand searching	Interpretive	Student nurses Observation, interviews, feminist lens	Update Smith's (1992) work on emotional labour	-Recognition that emotional labour requires teaching. Responsibility for this teaching shifting from sister/charge nurse level to mentors/lecturers -Emotional labour central to nursing and part of routine care -Helps ward function day to day, by encouraging patient engagement -Mentors/lecturers support reflection and story-telling -Support for and monitoring of mentors important for student success

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Smith and Gray, 2001a)	Emotional labour of nursing revisited: Caring and learning 2000	Journal article	Hand searching	Interpretive	Nursing students, nurses, nurse educators and doctors- various settings Qualitative interviews/focus groups	Clarify the concept of emotional labour in light of policy and educational changes	-Nurses saw emotional labour as a central part of their roles -Emotional labour helps nurses build trust and shared culture on a ward -Mentors and educators supported emotional labour in nursing students. Increasing speed/pressure in clinical settings has made this support vital -Primary emotional difficulty for nurses varies by setting
	(Mann and Cowburn, 2005)	Emotional labour and stress within mental health nursing	Journal article	Medline	EBP	Mental health nurses Questionnaires	Understand how different aspects of emotional labour relate to stress	-Emotional labour is positively associated with nurses' stress, with surface acting being the largest predictor -Emotional labour a prominent part of nurses' daily interactions with patients
	(Mark and Mann, 2005)	A health-care model of emotional labour: An evaluation of the literature and	Journal article	Hand searching	Empirical	Literature review	Develop a model of emotional labour in healthcare	-Emotional labour model: Instigating event, conflict type (emotional distress, dissonance, etc.), emotional labour performance, +/- outcomes -Process requires acknowledgement and support

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		development of a model						
	(McCreight, 2005)	Perinatal grief and emotional labour: A study of nurses' experiences in gynae wards	Journal article	Hand searching	Interpretive	Gynaecology nurses Qualitative, interview study	What is the emotional impact of pregnancy loss on nurses?	-Nurses value narrative storytelling to share emotional labour experiences -Role conflict when nurses manage needs of organisation, patients, and themselves -Emotional labour can be harmful for nurses, but also beneficial -Nurses had to learn emotional labour ad hoc on the job
	(Montgomery et al., 2005)	Emotional labour at work and at home among Greek health-care professionals	Journal article	Embase	EBP	Nurses and doctors Self-report questionnaires	What is the impact of family life on work, and vice versa?	-Period of decompression would be advantageous between work and family life -Surface acting at home has negative impacts on work for nurses -Gender differences, with women doing more emotional labour at home, and men doing more at work -Impacts outside of work demonstrate need to take emotional labour seriously as a job demand

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Timmons and Tanner, 2005)	Operating theatre nurses: emotional labour and the hostess role	Journal article	Medline	Interpretive	Operating theatre nurses and technicians Observation and interviews	What does emotional labour look like in the operation setting?	-Emotional labour in the OR is performed on colleagues, especially surgeons, rather than patients -Nurse's responsibility is to look after surgeon, like a party hostess -'Hostess role' included keeping surgeons happy and not upsetting them -Nurses pander to surgeons with food, music, hiding then 'finding' tools -Nurses overlooked safety violations to avoid conflict -Behaviour does not extend to other theatre participants, esp. male technicians
	(Wadding ton, 2005)	Behind closed doors - The role of gossip in the emotional labour of nursing work	Journal article	Scopus	Interpretive	Specialist nurses in one hospital Semi-structured interviews	What role does gossip play in nurses' emotional expression and management?	-Gossip is everywhere in nursing, and provides private chance to vent emotions -Process of multi-media, informal communication -Informal support provided as colleagues can help reframe situations -Comfortable context, vs. formal debriefing -Can be negative and malicious -Gossip is protective, as a way of releasing true feelings -Nurses find gossip helpful, but it is not an

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								effective means of dealing with long term issues
	(Huynh et al., 2008)	Emotional labour underlying caring: An evolutionary concept analysis	Journal article	CINHAL	EBP	Concept analysis	How has emotional labour in nursing evolved/currently understood?	-Emotional labour can be considered Watson's caring theory in practice. Governed by organisational/professional norms -Remains undervalued work, little empirical work. Often described as linear -Emotional labour associated with empathy, caring, compassion. Not always positive displays. -Debates about how emotional labour is related to experience, gender, empathy
	(Weir and Waddington, 2008)	Continuities in caring? Emotion work in an NHS direct call centre	Journal article	Embase	Interpretive	Call centre nurses Ethnography	How do nurses conduct emotional labour in a phone-based setting? [lacking face-to-face contact]	-Potential for high levels of managerial surveillance in call centres, emphasising feeling rules. Nurses feel watched constantly -Manage caller's anxiety while assessing and creating care plan -Focus on sound of voice to convey emotions, and not sound robotic -Strain from lack of community support

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Yang and Chang, 2008)	Emotional labour, job satisfaction and organizational commitment amongst clinical nurses: A questionnaire survey	Journal article	Hand searching	Empirical	Hospital nurses Questionnaires	What is the relationship between emotional labour, job satisfaction and commitment to an organisation?	-Surface acting negatively impacts organisational commitment, while the emotional display rules negatively impact job satisfaction -Deep acting positively impacts job satisfaction
	(Gray, 2009)	The emotional labour of nursing - defining and managing emotions in nursing work	Journal article	Scopus	Interpretive	Nurses and doctors Qualitative interviews	Re-examine emotional labour in nursing (follow on from Smith 1992, 2000)	-Nurses linked emotional labour and constant patient contact -Emotional labour made the daily routine run more smoothly, i.e. building trust with patients made work easier -Patients expect emotional labour reflecting gendered stereotypes of nurses -Nurses have emotional labour expectations of each other, i.e. responses to patient deaths

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Gray and Smith, 2009)	Emotional labour and the clinical settings of nursing care: Perspectives of nurses in East London	Journal article	Hand searching	Interpretive	Nurses in primary care, mental health, paediatric oncology Qualitative interviews	Discuss emotional labour and have nurses reflect on their practices	-Nurses manage patients' feelings and their own to provide care- emotional dissonance -Nurses had difficulty leaving their work behind at the end of the shift -Ideas like getting to know the patient at odds with patients who are violent etc. -Nurses become attached to patients, with increased emotional investment -Burnout compromises nurses' abilities to do emotional labour
	(Stayt, 2009)	Death, empathy and self-preservation: The emotional labour of caring for families of the critically ill in adult intensive care	Journal article	Hand searching	Interpretive	Critical care nurses Phenomenology, interviews	Nurses' experiences of emotional labour with family members in critical care	-Nurses suppressed emotions, but these accumulated over time -Patient death a major flashpoint for emotional labour -Nurses used emotional labour to build trust, during sharing information and showing empathy -Emotional labour directed towards patients but more so family, if patient is unconscious -Nurses maintained space between families for self-preservation

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Gray, 2010)	Emotional labour, gender and professional stereotypes of emotional and physical contact, and personal perspectives on the emotional labour of nursing	Journal article	Hand searching	Interpretive	Nurses and doctors Qualitative interviews	Explore gendered nature of emotional labour	-Professionalisation of nurses is at odds with archetypes of angels, natural caring. Nurses felt held to a standard of old images of the profession -Women use emotional labour to help patients feel safe and build trust -Decisions of which type of nursing to pursue reflect gendered expectations and amount of emotional labour that's expected (i.e. women - medical, men - mental health) -Gendered expectations followed nurses. Men who worked in medical care stereotyped gay. In mental health, men dealt with violent patients and 'protected' female nurses
	(Diefendorff et al., 2011)	Emotional display rules as work unit norms: A multilevel analysis of emotional labour among nurses	Journal article	Scopus	EBP	Hospital nurses Questionnaires	Do display rules exist at a ward-level (vs. organisation-wide)?	-Display rules are expectations for employees around emotional displays -Each ward has emotional display rules that are shared among nurses, and combine with individual display rules. There are group-level norms, not only organisational norms -Display rules relate to patient population, and patient stress

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								-Job satisfaction influenced by social context at work, while burnout was influenced by individual level factors
	(Bartram et al., 2012)	Do perceived high performance work systems influence the relationship between emotional labour, burnout and intention to leave? A study of Australian nurses	Journal article	Embase	EBP	Hospital nurses Questionnaires	How do emotional labour and high-performance work systems impact burnout and intention to leave?	-High performance work systems are human resource systems aimed at supporting employees with things like training, teamwork, decentralised decision-making -High performance work systems are negatively associated with emotional labour, burnout, and intention to leave. These systems may help employees manage negative emotions more effectively -Emotional labour is positively associated with intention to leave and burnout -Human resource departments can implement interventions to help manage emotional labour. Does not only occur at clinical level
	(Pisaniello et al., 2012)	The influence of emotional labour and emotional work on the	Journal article	Scopus	EBP	Hospital nurses Questionnaires	What is the relationship between emotional labour/work	-Distinguishes emotional labour as being for the organisation (expected), and emotional work being for patients (voluntary) -Emotional labour impacted burnout and

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		occupational health and wellbeing of South Australian hospital nurses					and nurses' wellbeing and stress?	stress more than emotional work -Surface acting negatively impacted nurses, although deep acting may also have negative, cumulative impacts
	(Karimi et al., 2014)	Emotional rescue: The role of emotional intelligence and emotional labour on well-being and job stress among community nurses	Journal article	Embase	EBP	Community nurses Questionnaires	How is emotional labour associated with well-being and job stress for community nurses? (extends previous work to community nurses)	-Increased emotional labour relates to more job stress and lower wellbeing -Emotional intelligence, or ability to handle emotions, supports wellbeing and decreases job stress -Results are similar in hospital and community nurses

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Msiska et al., 2014)	Exposing emotional labour experienced by nursing students during their clinical learning experience: A Malawian perspective	Journal article	Embase	Interpretive	Malawian nursing students Phenomenology, interviews	Investigate experiences of emotional labour during undergraduate students' clinical learning	-Emotional labour is an integral part of clinical experiences -Nursing shortages lead to students filling gaps without sufficient oversight or support -Challenges in populations needing care, and lack of resources -Death and dying require extensive emotional labour. Can be very traumatic for students -Emotional labour required to maintain relationships between students and ward nurses, supervisors etc. Students experience policing vs supporting and teaching -Shouting at students creates humiliation, and loss of trust with patients. Many difficult emotions to manage, students may hide/distance themselves -Factors all create extra emotional burden on students

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Mauno et al., 2016)	Emotional labour and work engagement among nurses: Examining perceived compassion, leadership and work ethic as stress buffers	Journal article	Medline	EBP	Finnish nurses, various settings Questionnaires	Assess whether compassion, transformational leadership and work ethic buffer against emotional labour's negative consequences	-Work ethic refers to working to high ethical standards in this context -Work ethic protects from negative impacts of emotional labour -Compassion and transformational leadership do not impact emotional labour. Compassion may become compassion fatigue in situations of high stress
	(Delgado et al., 2017)	Nurses' resilience and the emotional labour of nursing work: An integrative review of empirical literature	Journal article	Scopus	EBP	Integrative review	What is known about resilience in the context of emotional labour?	-Resilience may help address negative outcomes from emotional labour. Concepts have not been widely linked in studies -Relational demands (with colleagues, patients) main source of emotional labour for nurses -Managing grief around death and dying a central topic. Also, aggressive, racist, and difficult patients

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	(Edward et al., 2017)	Emotional labour in mental health nursing: An integrative systematic review	Journal article	Embase	EBP	Integrative systematic review	What is known about emotional labour and mental health work?	-Arguments of caring as being natural reinforce idea that emotional labour does not need to be taught/supported -3 themes: emotional labour and caring, emotional exhaustion, and self-protection/emotional intelligence (p. 217) -Possible pathways of managing emotional labour well leading to resilience/retention, and managing poorly leading to burnout/attrition
	(Elliott, 2017)	Emotional labour: Learning from the past, understanding the present	Journal article	Embase	Critical	Foucauldian genealogical method of tracing emotional labour	Analysing how gender, socio-political climate, and health cultures have influenced understandings of emotional labour	-Emotional labour was recognised when nursing was almost exclusively female, as though emotional work was synonymous with women's work. Seen as natural, and did not need support or training -Difficultly with emotional labour (i.e. Francis report) seen as lack of compassion, rather than exhaustion of emotional resources -Emphasis on physicality in nursing work aligned with men's work in heavy industry, to match the public's understanding of work -Industrial action helped to validate emotional labour (and nursing more

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								broadly) as work -Increases in male nurses had potential to impact nursing's status. Male nurses face different expectations about nursing than females -Unrealistic expectations of nurses in current climate leads to burnout. Intervention required to support nurses so that they can conduct emotional labour
	(Brighton et al., 2018)	Emotional labour in palliative and end-of-life care communication: A qualitative study with generalist palliative care providers	Journal article	Embase	Interpretive	Interprofessional group, including nurses Semi-structured interviews	To explore palliative care providers' experiences of emotional labour and end-of-life care	-Overarching need to put patient and family first, at carer's expense -Carers experience a variety of emotions, which build up over time -Tension between authenticity of emotions, i.e. crying and being strong/professional -Use different techniques to manage emotions, either showing or not showing, distancing self from situation -Carers have need for support and debriefing, to share their true feelings safely -Expectations to self-manage, without training or support -Appropriate supports enable carers to put patients first

Theme	Author	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Chapman , 2018)	How do nurses perceive role-taking and emotional labour processes to influence work-family spill over?	Journal article	Scopus	Interpretive	Hospital nurses Interviews and diaries	How do nurses understand their roles and emotional labour influencing work-family spill over?	-Spill over refers to the transfer of stress from a work role to a family role, and vice versa. Happens to male and female nurses -Emotional labour may have positive or negative impacts on work-family spill over, depending on the roles the nurse assumes in each context -Nurses try to actively manage [decrease] work-family spill over, trying to mentally compartmentalise -Nurses experience more spill over when they demonstrate more empathetic emotions -Nurses report numbness or an inability to continue caring when they are exhausted from one role and then assume another (i.e. hard day at work - go home) -Emotional identification with patients worsens spill over
	(Han et al., 2018)	Effect of nurses' emotional labour on customer orientation	Journal article	Scopus	EBP	Hospital nurses Surveys	What is the impact of nurses' emotional labour on a customer	-Deep acting increased work engagement, decreases burnout, thus affecting level of service orientation of nurses -Surface acting decreased work engagement, increased burnout

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		and service delivery: The mediating effects of work engagement and burnout					service orientation towards patients?	-Interventions should try to increase deep acting, rather than decrease burnout
	(Wu et al., 2018)	The effects of emotional labour and competency on job satisfaction in nurses of China: A nationwide cross-sectional survey	Journal article	Embase	EBP	Hospital nurses Questionnaires	Explore job satisfaction and stress, competency, and emotional labour among nurses	-Chinese nurses experience moderate to high levels of emotional labour -Surface acting negatively impacts job satisfaction -Deep acting positively impacts job satisfaction -Low income and heavy workload were sources of stress -Skills training also improves job satisfaction

12 Appendix D: Cognitive Labour Meta-Narrative

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Learning	(Carper, 1978)	Fundamental patterns of knowing in nursing	Journal article	Experts	Empirical	Model	What are the different types of nursing knowledge?	-4 types of knowledge: empirical (science), aesthetics (art), personal knowledge (experience), and ethics (moral judgement) -Nursing requires all forms of knowing, which are not mutually exclusive
	(Dreyfus and Dreyfus, 1980)	A five-stage model of the mental activities involved in directed skill acquisition	Report	Experts	Empirical	Model	Model of how complex skills are learned	-Skills change over time. Practice is initially learned through principles (apply rules), then personal knowledge as experience grows (apply judgement). -Stages of skill acquisition are novice, competence, proficiency, expertise, mastery -Perception of environment widens over time, as does 'experience bank' -Everyday problem solving is the most important factor for skill acquisition
	(Benner, 1982)	From novice to expert	Journal article	Experts	Empirical	Model	Generalise Dreyfus & Dreyfus model to nursing	-Novices unable to manage when a situation represents an 'exception to the rule' because they do not have experience to draw on. Overwhelmed by environment, and unable to sort relevant information from rest.

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								-Mid-ranges can formulate long term plans and assess a situation as a whole -Experts intuitively understand situations. Have difficulty verbalising how they know something, as it has become second nature -Experience is not only time spent; it is building experience in problem solving
	(Burger et al., 2010)	Responses to work complexity: The novice to expert effect	Journal article	Hand searching	EBP	23 cardiac units Interviews, survey, observation, priority list	How do nurses (re)prioritise care?	-Locates decision-making in complex environment -4 themes used to respond to complexity. Cognitive strategies- mental organisation of work, anticipating care/responding, evaluating priorities often -Communication-begins with immediate needs, changes with more experience -Integration of roles-teaching/providing support while doing other activities -Organisational tools- worksheets, documentation -Reaction to the environment changed over time, with nurses perceiving it as less stressful

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Thinking	(Kataoka-Yahiro and Saylor, 1994)	A critical thinking model for nursing judgement	Journal article	Hand searching	Empirical	Literature review, expert consultation	Critical thinking model in nursing	-5 aspects of critical thinking: knowledge, experience, competencies, attitude, and standards -Focus on addressing problems without a single solution -Different levels of engagement with critical thinking: basic, complex, commitment
	(Scheffer and Rubenfeld, 2000)	A consensus statement on critical thinking in nursing	Journal article	Hand searching	Interpretive	Expert nurses Delphi method	Consensus method of establishing critical thinking definition	-'Habits of mind' i.e. perseverance, confidence -Skills i.e. information seeking, reasoning
	(Higuchi and Donald, 2002)	Thinking processes used by nurses in clinical decision making	Journal article	Hand searching	EBP	Hospital nurses Chart audit, narrative analysis	How do nurses make decisions?	-5 processes identified. Description- lists of facts -Selection- choosing relevant information -Inference- overall judgement about patient situation -Synthesis- combining several issues and developing a plan of care -Verification- evaluating different techniques

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	(Simmons et al., 2003)	Clinical reasoning in experienced nurses	Journal article	Hand searching	Interpretive	Hospital nurses Think aloud method	What cognitive strategies are used to reflect on assessment findings?	-Clinical reasoning is a cognitive skill to gather and assess data -Nurses focus on consistent patient data concepts, i.e. diagnosis, family, plan, and organise their thinking around these concepts -Concepts connected together during reasoning, i.e. problem, test, rationale -Reasoning processes used were describe, explain, plan, evaluate, conclude -Pattern recognition part of reasoning -Experience was more important for developing reasoning than length of work
	(Simmons, 2010)	Clinical reasoning: Concept analysis	Journal article	Hand searching	EBP	Concept analysis	How have nurse researchers understood clinical reasoning?	-Clinical reasoning is a complex process using cognition, meta-cognition, and knowledge in the nursing process and decision-making -Myriad of terms. Used diagnostic reasoning, clinical reasoning, decision-making, judgement, and problem-solving -Attributes: analysis, deliberation, heuristics, inference, logic, information processing, intuition (p. 1152)

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Johansen and O'Brien, 2016)	Decision-making in nursing practice: A concept analysis	Journal article	Hand searching	EBP	Concept analysis	How have nurse researchers understood decision-making?	-Dynamic process in complex environments. Context influences process -Assessed decision-making, problem-solving, judgement -Process requires situational awareness and self-reflection -Attributes: heuristics, intuition, analysis, critical thinking, clinical reasoning, knowledge and experience (p. 43)
Stacking	(Potter et al., 2004)	Mapping the nursing process: A new approach for understanding the work of nursing	Journal article	Citation tracing	EBP	Hospital nurses Mixed method ethnography	How can mapping illustrate the non-linear, complex nature of decision-making in the nursing process?	-Environment needs to support clinical reasoning and work flow -After initial assessment, there are frequent cognitive shifts between patients and demands of the ward -71 cognitive shifts observed in 10 hours, with 43 interruptions -Safety implications for nurses who are required to make frequent cognitive shifts and manage extensive content in their working memories -Cognitive capacity has limits, which may place nurses at risk for error

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Potter et al., 2005b)	Understanding the cognitive work of nursing in the acute care environment	Journal article	Experts	EBP	Hospital nurses Mixed method ethnography	Analyse cognitive work, disruptions, and nurses' risks for errors	-Time distribution: patient contact 25%, documentation 23%, consultation 26%, medications 16%, searching 5%, breaks 5% -128 links (avg. 13/ hr) where nurse walked from one location to another, signalling a new action -Repeated patterns represented unstable patients, not inefficiency -Nurses shifted their attention from one patient to another 86 times (every 6 to 7 min) -Frequent interruptions in practice -Work is complex and non-linear. Increased cognitive load increases risk for error, as working memory is exhausted
	(Potter et al., 2005a)	An analysis of nurses' cognitive work: A new perspective for understanding medical errors	Journal article	Citation tracing	EBP	Hospital nurses Mixed method ethnography	What is the impact of interruptions on nurses' cognitive work?	-Time distribution: patient contact 22%, documentation 21%, communication 26%, medications 17%, searching 5% -157 links per shift, 76.6 cognitive shifts (9.3/hr) -30 interruptions per shift, the majority during implementations of care -Cognitive stacking measured 11-21 activities during shift. Average 15 things

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								stacked -High cognitive load could overwhelm a nurse's working memory, leading to errors or omissions
	(Wolf et al., 2006)	Describing nurses' work: Combining quantitative and qualitative analysis	Journal article	Hand searching	EBP	Hospital nurses Mixed method ethnography	What are nurses' activities, and how are these effected by their environment?	-Nurses spend more time coordinating care than at bedside -Peaks in cognitive stacking reflect peaks in ward activity -Does not account for relative difficulty of things stacked
	(Patterson et al., 2011)	Investigating stacking: How do registered nurses prioritize their activities in real time?	Journal article	Hand searching	EBP	Hospital nurses Interviews	How do nurses prioritise their cognitively stacked tasks?	-Cognitive stack largely prioritised as: addressing immediate clinical concerns, uncertain activities, managing pain, core caregiving, relationship management, documenting, helping others, patient support, system improvement, preparing supplies, personal breaks (p. 391) -Scope of practice/delegation could be implemented based on nurses' top priorities, with other workers handling lower priority items -Could be used to teach nursing students how to prioritise

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
								-Nurses prioritise breaks as last - implications for staff wellbeing
Cognitive load	(Ebright et al., 2003)	Understanding the complexity of registered nurse work in acute care settings	Journal article	Hand searching	EBP	Registered Nurses on various hospital units Micro-ethnography and follow up interviews	What human and environmental factors affect decision-making by expert RNs on medical-surgical acute care units?	-Pressure to respond to increasing work demand and not enough staff. Safety risks for patients -Sources of complexity: misalignment of location and need for supplies, missing items, repetitive travel, interruptions, waiting, and issues with communication -Goal and knowledge guided decision-making -Stacking, anticipation, proactive monitoring, strategic delegation, memory aids, and moving on to the next all helped nurses manage their cognitive work
	(Redding and Robinson, 2009)	Interruptions and geographic challenges to nurses' cognitive workload	Journal article	Hand searching	EBP	Registered Nurses on various hospital units Descriptive observation, tracking number/nature	How are nurses' trajectories impacted by interruptions?	-Analysis of how interruptions add to cognitive load -Interruptions included direct questions, distractions, searching, phone calls, patient family questions, and call bells -Interruptions plus sub-optimal ward design changed nurses' work patterns -Decentralised supplies, limited interruption, and social management of

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						of interruptions		interruptions may decrease nurses' cognitive load
	(Ebright, 2010)	The complex work of RNs: Implications for healthy work environments	Journal article	Hand searching	EBP	Discussion paper	How does the complexity of nursing work relate to healthy work environments?	-'Stacking' includes organising, prioritising, and making decisions. Idea of stacking bridges cognitive stacking and organisational labour -Stacking is a continuous workflow management strategy -Need to design work around unpredictability and complexity -Cognitive work requires meta-cognition and reflection -Strategies to support cognitive work include identifying and removing barriers, managing technology, focus on direct care, support of new nurses
	(Elfering et al., 2011)	Job characteristics in nursing and cognitive failure at work	Journal article	Hand searching	EBP	Hospital nurses Questionnaire	Do work stressors predict cognitive failure among nurses?	-High levels of stress can impact cause cognitive failures, which are mistakes that nurses normally would not make -Task stressors such as interruptions, time pressure, uncertainty, and constraints increase the likelihood of cognitive failures

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Lundgrén-Laine et al., 2011)	Managing daily intensive care activities: An observational study concerning ad hoc decision making of charge nurses and intensivists	Journal article	Hand searching	EBP	Critical care nurses and intensivists Observation and think aloud technique	How do clinicians make ad hoc clinical decisions?	-Decisions must be made immediately in response to unpredictable situations -Ad hoc decisions drive patient care and flow. Made in clusters, not separately -Average 39 decisions per charge nurse/shift, and 240 per shift made by all shift leaders -Process-focused decisions involved workflow, HR, equipment. Nurses made all HR decisions. -Situation focused decisions reflected single incidents in patient management -Decisions needed because instances outside of protocols
	(Koch et al., 2012)	ICU nurses' evaluations of integrated information displays on user satisfaction and perceived mental workload	Journal article	Hand searching	EBP	Critical care nurses Questionnaires	Does nurses' user satisfaction increase and mental workload decrease when using an integrated display for	-Consolidated display information from ICU equipment may lower nurses' mental workload and increase satisfaction -Technology does not yet have capacity for integrated displays, and needs to catch up

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
							patient information?	
	(Ng and Curley, 2012)	"One more thing to think about…" Cognitive burden experienced by intensive care unit nurses when implementing a tight glucose control protocol	Journal article	Hand searching	EBP	Discussion paper	How does implementing protocols add to nurses' cognitive burden?	-Protocol development is interdisciplinary, but implementation is primarily nursing -Impact of protocols on cognitive burden goes unquestioned -Each protocol multiplies patient complexity (as opposed to simply adding more tasks) -Cognitive burden impacted by context. Does not occur in a vacuum -Protocols need to be designed to support cognitive work
	(Perron, 2015)	The cognitive load of registered nurses during medication administration in an electronic health record environment	Journal article	Hand searching	EBP	Hospital Nurses Quasi-experimental design	Understand factors influencing the cognitive load of nurses during medication administration, to prevent errors	-30 nurses had EEG monitoring during medication administration simulation, with a controlled number of interruptions -Multitasking increases cognitive load, which is the demand a task creates for one's cognition -Poor quality sleep negatively impacts mental processing

Theme	Author/ Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
	(Elfering et al., 2017)	Quantitative work demands, emotional demands, and cognitive stress symptoms in surgery nurses	Journal article	Hand searching	EBP	Surgical nurses Questionnaire	Are cognitive stress symptoms related to emotional and work stress in operating theatres?	-Cognitive stress symptoms (CSS) include difficulty concentrating, making decisions, remembering things -Assessed against emotional abuse, emotional demands, time pressures, resources -CSS not related to work pressures, but associated with emotional demands and abuse

13 Appendix E: Organisational Labour Meta-Narrative

Author/Year	Title	Type of Record	Source	Paradigm	Population/ Method	Question/ Aim	Themes/ Outcomes
Allen (2014)	The Invisible work of nurses: Hospitals, organisations and healthcare	Book	Experts	Critical	40 nurses Observation- 8 hours per nurse Interviews	What is the organising work of nurses?	-Put organising work as the focus, rather than the background or context -Nurses develop working knowledge of patients and system, use artefacts to store knowledge -Create trajectories of care through organising work, i.e. discharge summary sent to district nurse continues care plan -Nurses liaise between professions, and coordinate the work of others -Nursing work is more than patient care. It also keeps system itself going

14 Appendix F: Empirical Studies of Work-as-Imagined/ Work-as-Done

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
CARE studies	(Anderson et al., 2016a)	Implementing resilience engineering for healthcare quality improvement using the CARE model: a feasibility study protocol	Journal Article	Original publication-known piece	Publish protocol for CARE model study	Proposed-Emergency department (ED)/Older Person's Unit (OPU) Multi-disciplinary team (MDT)	Observation and Interviews	ED/OPU, UK	-Published CARE model as means of evaluating WAI/WAD in healthcare
	(Back et al., 2017)	Emergency department escalation in theory and practice: a mixed-methods study using a model of organizational resilience	Journal Article	Citation tracing, CARE paper	Escalation policies in theory and in practice	ED MDT	Observation and Interviews	ED, UK	-Escalation policies had variable outcomes, and were not always being evaluated/followed up -Escalation was driven by social factors as much as demand -CARE model an effective lens

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
	(Anderson et al., 2016a)	Resilience Engineering as a Quality Improvement Method in Healthcare	Book chapter	Citation tracing, CARE paper	Quality improvement using CARE model and 4 abilities	ED MDT	Observation and Interviews	ED, UK	-Lack of situational awareness and evaluation of measures to enhance flow -Approach varied by practitioner -Intervention improved huddles and follow up
	(Anderson et al., 2019a)	Resilience Engineering for Quality Improvement: Case study in a unit for the care of older people	Book chapter	Citation tracing, CARE paper	Howresilience engineering principles can be used in quality improvement	OPU	Observation and Interviews	OPU, UK	-Emphasis on Quality Improvement, not just understanding work -Resilience narratives were used to map observations with theory -Difficulty monitoring discharge progress -Developing artefact to track process
Resilience and Lean	(Saurin et al., 2017)	Toward a resilient and Lean Health Care	Book chapter	Resilient Health Care vol. 3	Contrasting Lean and RE views, with medication administration as case study	MDT in ED	Observation and Interviews	ED, Brazil	-RE focuses on safety and Lean focuses on efficiency. Both frameworks support complexity rather than human error as source of faults -Mapped 2 widely used medications using Lean and FRAM -FRAM identified variations in WAD, and Lean accounted for time spent/wasted at certain stages -Need for slack in the system. Lean

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
									tempered by RE. Each could be emphasised under various conditions
	(Rosso and Saurin, 2018)	The joint use of resilience engineering and lean production for work system design: A study in healthcare	Journal Article	Citation tracing, CARE paper	Applying Lean and RE [FRAM] to understand ED-ICU flow	MDT in ED and ICU	Observation and Interviews	ED - ICU, Brazil	-FRAM model and Value Stream Map used to map the system -There is crossover between RE and Lean in systems analysis -Admissions had many actors and channels of communication, creating barriers and lack of situational awareness -Likely that models would produce short lived results, due to breadth and complexity of the system -Use Lean to see where unnecessary complexity can be pruned
RE literature review	(Patriarca et al., 2017)	A paradigm shift to enhance patient safety in healthcare, a resilience engineering approach: scoping review	Journal Article	Citation tracing, CARE paper	Identify current state of resilience engineering in healthcare	63 pieces	Scoping review	Italy	-Four main categories of RE work: theory, practice (abilities), device design, modelling

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
		of available evidence							
	(Patriarca et al., 2018)	Resilience engineering: current status of the research and future challenges	Journal article	Hand searching	Broad review of RE	1080 pieces	Factor analysis	Italy	-Different types of RE: modelling, definitions, reflections, the need for RE, improvisation, and other -Gap between WAI-WAD important for modelling resilience -FRAM as key model -Field is still predominantly 'knowledge for knowledge' vs 'knowledge for action'
Secret second handover	(Sujan et al., 2015b)	Translating tensions into safe practices through dynamic trade-offs: the secret second handover	Book chapter	Resilient Health Care vol. 2	Examination of handover, a time of risk and contact between multiple departments /actors	MDT	Case study of cross sectoral patient handover/ report via observation, and interviews with thematic analysis	ED, UK	-Adaptations in handover practices promote safety -Competing interests and priorities impact how work-as-imagined translates to work-as-done, which drives the negotiation of priorities (speed vs thorough) -Performance variability is essential to providing safe healthcare -Clinicians identify different priorities, impacting what information is shared/valued during communications
	(Sujan et al., 2015a)	The role of dynamic trade-offs in creating safety—A qualitative study of handover across care	Journal article	Citation Tracing					

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
		boundaries in emergency care							
Adverse events	(Nakajima, 2015)	Blood transfusion with health information technology in emergency settings from a Safety-II perspective	Book chapter	Resilient Health Care vol. 2	How can an incident with blood product administration be understood as WAD using FRAM?	ED nurses	FRAM model of incident	ED, Japan	-Case analysis can uncover sources of Performance variability -Irregularities in Performance influenced by technology -Barcodes were intended to improve safety but created challenges in practice -Purpose of barcode was not understood safety related = variable use
	(Nakajima et al., 2017)	Exploring ways to capture and facilitate work-as-done that interact with health information technology	Book chapter	Resilient Health Care Vol. 3	Use simulation to develop patient verification practices that were feasible in ED	ED MDT	In situ simulation and observation, with iterative development, and questionnaires to nurses	ED, Japan	-Impact of technology problems on correct patient identification and blood product administration -Simulation identified some variance that was acceptable (typing vs. scanning barcode) and others that were unacceptable (checking barcode before vs. after administration) -Environment influenced variations in practice -Made changes to policy -Technology like barcode scanning

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
									can provide a false sense of security re: safety checks
	(Clay-Williams et al., 2015)	Where the rubber meets the road: Using FRAM to align work-as-imagined with work-as-done when implementing clinical guidelines	Journal article	Pubmed	Identify whether FRAM can be used to create effective clinical guidelines	ICU systems	FRAM modelling of work for 2 cases: patient transfer and managing clinical demand	ICU in Australia and Denmark	-Normal operation includes incompatible assumptions around WAI/WAD -Base guideline developed, case scenarios FRAMed, guideline refined to reflect WAD -Collaborative meetings were key; FRAM was a tool for discussion
	(Nyssen and Betastegui, 2017)	Is system resilience maintained at the expense of individual resilience?	Book chapter	Resilient Health Care vol. 3	Exploring personal resilience in system crises	10 ED physicians, 10 police officers	Interviews and questionnaires	France	-Quest to maintain the system provides little consideration for people inside -Unpredictability, emotional content, operational difficulties, and coordination difficulties all flashpoints -Work environment impacts on the individual -When determining acceptable/unacceptable outcomes,

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
									must consider the caregiver, as well as the patient and system
	(Ross et al., 2018)	A systems approach using the functional resonance analysis method to support fluoride varnish application for children attending general dental practice	Journal Article	Citation tracing, CARE paper	FRAM approach to identifying process of application of fluoride varnish for children	Dentists	Survey, interviews, workshop	Dental practices, UK	-System modelling facilitated a co-designed intervention toolkit to promote preventative dental practice
	(Hannigan et al., 2018)	Care coordination as imagined, care coordination as done: Findings from a cross-national mental health systems study	Journal article	Pubmed	Comparing WAI/WAD in care coordination	28 care coordinators	Policy review and interviews with service users, families, and care coordinators	UK, mental health	-Gaps in WAI/WAD have grown gradually, without detection -Initial policy documents were broad without detailed guidance. Became increasingly specified -3 major themes: relational aspects of work, connecting service users and system, and work being shaped by the system -Coordinators tailored care as much as possible within system

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
									-Work organised around psychiatrists -Risk assessment a driver of care. Responsive rather than pro-active -Required documentation burdensome part of WAD -Training varied widely -Lack of resources and staff primary reason for differences in WAI/WAD
	(Damen et al., 2018)	Preoperative anticoagulation management in everyday clinical practice: An international comparative analysis of work-as-done using FRAM	Journal article	Pubmed	Assess anticoagulation management in everyday practice and assess utility of FRAM as tool to reconcile WAI/WAD	18 clinicians	Policy review FRAM model, compared with professionals' interviews FRAM model	Australia and The Netherlands, Cardiothoracic surgery	-Differences between WAI and WAD, and between study sites -Local adaptations developed for safety -Initial FRAM based on international guidelines, and formed basis of interviews -Analysed time required for modelling to assess usability -Work supported by personal artefacts, which could be developed more formally

Study	Author/ Year	Title	Type	Source	Question/ Aim	Participants	Method	Setting	Themes/ Outcomes
	(Schnitker et al., 2019)	Decision-centred design in healthcare: The process of identifying a decision support tool for airway management	Journal Article	Citation tracing, CARE paper	How can WAD inform decision support for difficult airways-blended with human factors approach	Anaesthesiologists	Observations, interviews, focus groups	OR, Australia	-Changes to design, equipment displays, and education supported decision-making with complex airways -Emphasis on bottom-up approach

15 Appendix G: Theoretical Articles on Work-as-Imagined/Work-as-Done

Author/ Year	Title	Type	Source	Type of Arguments	Main Outcome
(Hollnagel, 2015)	Why is work-as-imagined different from work-as-done?	Book Chapter	Resilient Health Care vol. 2	Discussion paper	-Idea of WAI and WAD has been examined widely; terms/concepts comparatively new -Related to concepts of sharp end/blunt end as relative terms -WAD cannot be fully specified in complex adaptive systems -Challenges are time scales (seconds vs. years) and scale (one patient vs. population) -Dominant assumption that disparity between WAI/WAD means WAD is wrong -Goal is to reduce misalignment
(Hollnagel et al., 2015)	From Safety-1 to Safety-2	White paper	Colleagues	Policy statement	-Outline premise of resilience engineering, and shift towards proactive responses to safety -Systems currently assume people work-as-imagined -Premise in systems is that work should not venture beyond work-as-imagined -Assumed that work can be analysed and prescribed, but not the case

Author/ Year	Title	Type	Source	Type of Arguments	Main Outcome
(McNab et al., 2016)	Understanding patient safety performance and educational needs using the 'Safety-II' approach for complex systems	Journal article	Pubmed	Discussion paper	-System complexity means that models taken from other industries are not fit for purpose in healthcare -Investigations compare WAD to WAI, which inevitably means human error will be identified as a fault -Connection between WAD and efficiency/thoroughness trade off -Need to understand WAD and create conditions that enable flexibility -Used WAD as part of adverse event investigation
(Johnson and Lane, 2017)	Resilience Work-as-Done in everyday clinical work	Book Chapter	Resilient Health Care vol. 3	Model	-6 C's model: care, clear ownership, constraints, communication, cognition, capture, competence, challenge, compliance, culture -These are qualities available for resilient performance -'Blunt and sharp end' creates cognitive bias. Terms not useful as binary -Impact in different roles vary, from seconds/one patient to years/populations
(Anderson et al., 2016b)	Modelling resilience and researching the gap between work-as-imagined and work-as-done	Book Chapter	Resilient Health Care vol. 3	Model	-CARE model presented -WAI rests on assumptions about how work should be done, and the idea that work can be specified in advance -Move beyond modelling difficulties and use WAI/WAD for quality improvement

Author/ Year	Title	Type	Source	Type of Arguments	Main Outcome
					-Support adapting safely rather than increase work specifications -WAI is a reconciliation between demand and capacity -WAD is dynamic adaptation. Needs to be supported for safe care -Complex, emergent systems mean that there will always be new demands -In-depth ethnography needed to understand work
(Patterson et al., 2017)	Simulation: closing the gap between work-as-imagined and work-as-done	Book Chapter	Resilient Health Care vol. 3	Discussion paper	-Formative simulation an opportunity to explore WAI and WAD in a lower risk setting -Debriefing enables learning for organisations/systems, i.e. integrate feedback into policies -Develop skills that support adaptation, like communication -Identify potential modifications to the environment -Creates low risk opportunities to test ideas and new practices
(Sujan et al., 2017)	Reporting and learning: From extraordinary to ordinary	Book Chapter	Resilient Health Care vol. 3	Discussion paper	-Incident reporting is not useful because it focuses on extraordinary occurrences rather than everyday successes -Breaking a 'causal chain' is a fallacy in an emergent system -Everyday hassles should be addressed using a

Author/ Year	Title	Type	Source	Type of Arguments	Main Outcome
					proactive approach -Proactive Risk Monitoring in Health Care approach used to analyse hassle narratives -Create appreciation among various stakeholders of how work actually proceeds -Changes needed to make reporting/learning useful for organisations
(Mannion and Braithwaite, 2017)	False dawns and new horizons in patient safety research and practice	Journal article	Colleagues	Editorial	-Medical imperative to do no harm. Widespread issues with safety continue in healthcare, despite numerous initiatives for improvement -Safety issues are complex, without simple solutions -Work-as-imagined rests solely with blunt end, work-as-done at sharp end
(Wears and Hunte, 2017)	Resilient procedures: oxymoron or innovation?	Book Chapter	Resilient Health Care vol. 3	Discussion paper	-Procedures as WAI seek to control practice and prevent errors through standardisation -Fitness of procedure not questioned. Errors blamed on not following the procedures. -Good procedures condense expertise and provide suggestions, and removed as necessary -Possible solution is to focus procedures on goals

Author/ Year	Title	Type	Source	Type of Arguments	Main Outcome
(Chuang and Hollnagel, 2017)	Challenges in implementing resilient health care	Book Chapter	Resilient Health Care vol. 3	Discussion paper	-Reflected on case of using WAI/WAD framework re central line infections in Taiwan -System conditions responsible for variable practices, not deviant staff -Factors like cost impact the implementation of guidelines -Staff had difficulty understanding how resilient healthcare could be integrated into systems -Need to introduce resilient healthcare in parallel to required activities like root cause analysis
(Braithwaite et al., 2017a)	Understanding resilient clinical practices in emergency department ecosystems	Book Chapter	Resilient Health Care vol. 3	Case studies	-Series of issues in ED, presented as case studies -Flow/throughput, secret second handover, sudden influx of patients, network analysis between staff, 'selling' patients to wards -Hospitals have 'tribal' organisation -Skills like negotiation required for resilient performance
(Clay-Williams and Braithwaite, 2017)	Realigning work-as-imagined and work-as-done: Can training help?	Book Chapter	Resilient Health Care vol. 3	Discussion paper	-Training should be developed around WAD, not ideal conditions -Help professionals develop awareness and focus on what is at hand -Make training specific and valuable for teams -Evaluate outcomes of training relative to goals

Author/ Year	Title	Type	Source	Type of Arguments	Main Outcome
(Hunte and Wears, 2017)	Power and resilience in practice: Fitting a 'Square Peg in a Round Hole' in everyday clinical work	Book Chapter	Resilient Health Care vol. 3	Discussion paper	-WAI seen as round hole, WAD square peg -Power required to create everyday clinical work, and thus needs to be considered with any intervention -Practitioners negotiate different degrees of risk/acceptability in their practices -Need to account for forces beyond policies that influence practices
(Hollnagel, 2017)	Prologue: Why do our expectations of how work should be done never correspond exactly to how work is done?	Book Chapter	Resilient Health Care vol. 3	Discussion paper	-WAI/WAD a contentious issue -Varied historical influences for the concepts -3 conditions: understanding of how system works, current state of affairs, and how changes may be brought about -Purpose is to avoid haphazard and ineffective work (which would ultimately be unsafe) -Applicability across contexts and industries

16 Appendix H: Research Ethics Approval

Research Ethics
Office

Franklin-Wilkins Building
Waterloo Bridge Wing
Waterloo Road
London SE1 9NH
Telephone 020 7848 4020/4072/4077

KING'S College LONDON

Jennifer Jackson

4 November 2016

Dear Jennifer,

LRS-16/17-3787 - Resilience Video Game

I am pleased to inform you that full approval for your project has been granted by the PNM Research Ethics Panel

- Ethical approval is granted for a period of **three years** from 4 November 2016 . You will not receive a reminder that your approval is about to lapse. It is your responsibility to apply for an extension prior to the project lapsing.
- You should report any untoward events or unforeseen ethical problems to the panel Chair, via the Research Ethics Office, within a week of occurrence. Information about the panel may be accessed at: http://www.kcl.ac.uk/innovation/research/support/ethics/committees/sshl/reps/index.aspx
- If you wish to change your project or request an extension of approval, please complete and submit a Modification Request to crec-lowrisk@kcl.ac.uk. Please quote your ethics reference number, found at the top of this letter, in all correspondence with the Research Ethics Office. Details of how to complete a modification request can be found at: http://www.kcl.ac.uk/innovation/research/support/ethics/applications/modifications.aspx
- All research should be conducted in accordance with the King's College London *Guidelines on Good Practice in Academic Research* available at: http://www.kcl.ac.uk/college/policyzone/assets/files/research/good%20practice%20Sept%2009%20FINAL.pdf

Please note that we may, for auditing purposes, contact you to ascertain the status of your research.

We wish you every success with your research.

Best wishes,

PNM Research Ethics Panel REP Reviewers

Research Ethics
Office

Franklin-Wilkins Building
Waterloo Bridge Wing
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KING'S College LONDON

09/04/2018

Dear Jennifer,

Reference Number: RESCM-17/18-3787

Study Title: Resilience Video Game

Modification Review Outcome: Full Approval

Thank you for submitting a modification request for the above study. This is a letter to confirm that your request has now been granted Full Approval.

If you have any questions regarding your application please contact the Research Ethics Office at rec@kcl.ac.uk.

Kind regards

Mr James Patterson

Senior Research Ethics Officer

on behalf of

PNM Research Ethics Panel

17 Appendix I: *Resilience Challenge* Evaluation Survey

Online survey

Demographic Questions

- Age (2-digit input)
- Please indicate your professional registration (i.e. Registered Nurse, X ray Technologist, etc.). If you work in healthcare and are not a registered professional, please indicate your role (i.e. health economist).
- How long have you been working in healthcare? (total in years)
- How do you identify? (Male, Female, In another way, Prefer not to say)

Six closed statements for healthcare respondents (5-point Likert scale)- Ranging from Strongly Agree to Strongly Disagree

- The game introduced me to the concept of organisational resilience.
- Playing the game increased my awareness of how clinicians adapt safely to pressures at work.
- Playing the game helped me think through the impact of my actions on patient safety.
- The game is relevant to my work.
- The game is engaging.
- I would recommend the game to others.

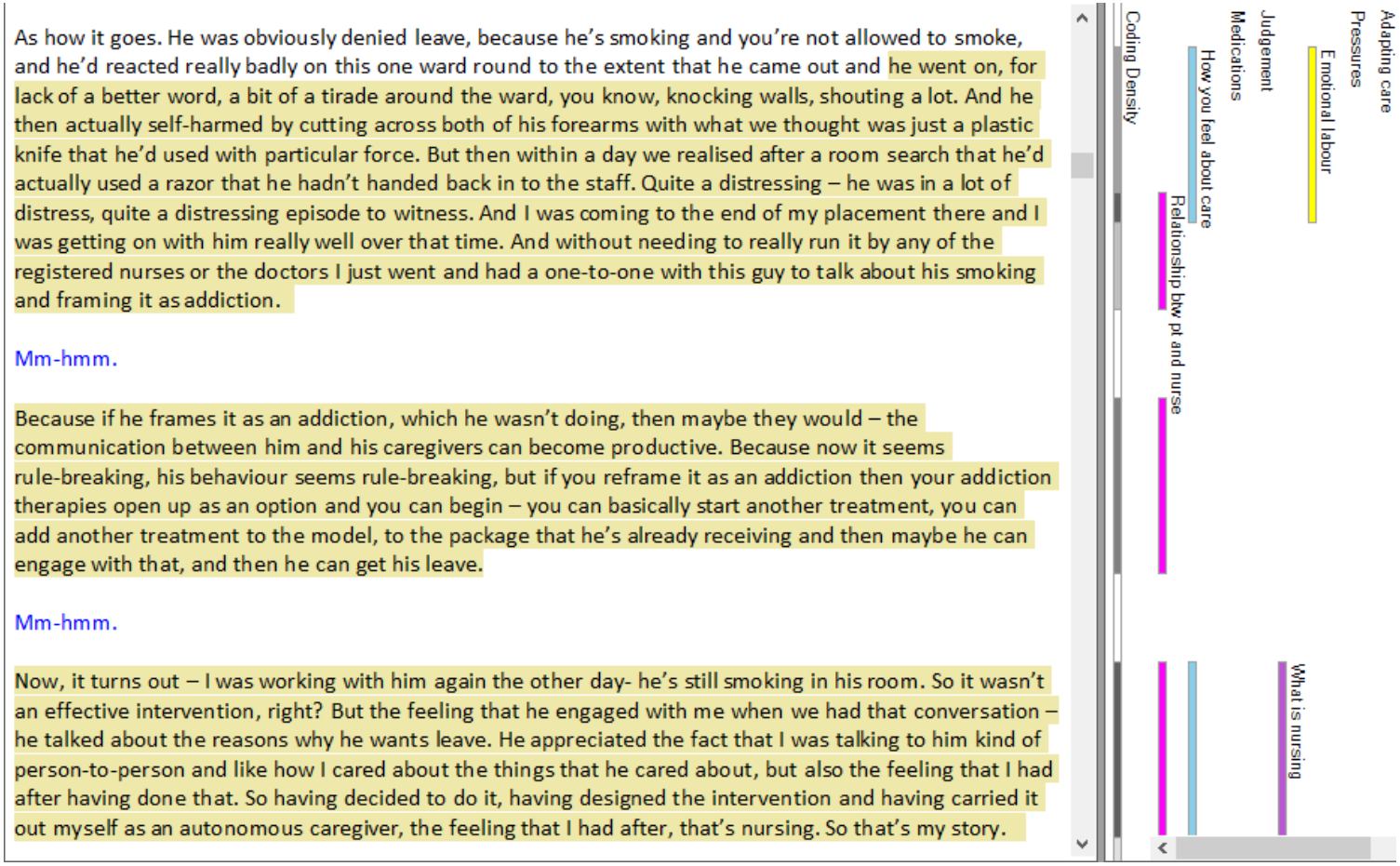
Four closed statements for non- healthcare respondents (scale as above):

- Playing the game increased my awareness of challenging scenarios that occur in healthcare.
- Playing the game increased my awareness of the pressures that healthcare professionals can face at work.
- The game is engaging.
- I would recommend the game to others.

Two open questions (Free-text boxes)

- Healthcare respondents: Has playing the game caused you to reflect on your own practice? If so, in what ways?
- Non-healthcare respondents: What was your overall impression of *Resilience Challenge*?
- All respondents: Please use the text box below for any other comments you have regarding the game.

18 Appendix J: Coded Text



19 Appendix K: Sample Journal Entry

Not feeling super great today, but I am trying to rally to finish P6 and start P14, with an aim of all coding done tomorrow. I know “done” is a fraught term in qualitative research, but each will have had one pass through, and that’s enough to start writing. I also feel good about the structure I’ve got going for the chapters, so I hope the writing will flow.

Back to P6- In terms of the patient transfer, he does the same thing other students did- propose solutions that would generally address the issue of not being able to mobilise, but also not appropriate for the timeline. For example, they suggest things like improving hydration status, which is reasonable to improve mobilization, but that is a medium term intervention, and does not deal with the immediate issue of getting from a trolley to the bed. This makes me think of Allen and Benner, in terms of developing competence, and also managing trajectories.

In some instances, participants compare to ‘bad’ nurses, however defined, to use the deficit to demonstrate what good nurses are/do. As though the lack of the thing helps appreciate its presence.

P6 is an example of the game being well used by someone who has not worked in any kind of similar setting. Good facilitation makes it a versatile tool.

20 Appendix L: Sample Working Ideas Excerpt

What are nurses' understandings of their WAD?
-Emphasis on safety, and advocating for the patient
-Influence the context of care, although that may not be something they clearly see that they are doing
-Level of experience and relationships are important
-Patients are more important than they may have been represented previously in RE, in terms of determining adaptations
-Leading, innovating, advocacy… nurses have a clear picture of the expertise required for their practice. And they know no one else sees this.
-Nursing work has become more skilled and autonomous over time. Degree requirement has helped this
-Informed by personal standards, preferences, and experiences, as much as policies or evidence
-Students are most sharply aware of distance between WAI and WAD. Nursing WAI is both external (policies, procedures) and internal (experiences from school very influential, personal standards)
-Work is adapted because of variation among patients, not as much in response to pressures
-No one particular sticking point, i.e. admissions

What is the nature of nursing work-as-done?
-A myriad of roles! Some which nurses develop themselves, especially to fill gaps for patients. Love the flexibility. All have had multiple roles in their career (students excepted)
-Hierarchy of care, within the hierarchy of the hospital. Community services are different, with flattened hierarchies
-Rationing of care: First thing to go is breaks, individual time with patients, emotional support. Medications etc. always done. Documentation pushed until the end of the shift. Driven by workload and unit culture.
-Role very dependent on setting, driven by context
-Have personal preferences for how they spend their time at work i.e. more time/less time with family
-Trajectory is important, it's not just about the immediate shift. Do not always know if their adaptations work- patient is discharged and that's it
-The CARE model applies to more than just patient situations- also applies to staff issues, such as debriefing
-Work in hospitals is very 'doing for' and outside hospitals is 'doing with'/partnership
-Can include too much care, i.e. ICU or mental health- suppressing patient autonomy
-Conflict over seeing things as black/white vs grey (is there a right answer?). Good care is subjective
-Relationships help get things done
-Providing care is a developmental process. Confidence is as important as knowledge to make the right decisions.
-HUGE amount of cognitive labour [stuns even me how much it is discussed]
-WAI is the evaluation model- audits, student mentorship etc.

21 Appendix M: Early Coding Framework Sample

Work-As-Imagined:

Patients:

- Goals and vision for care

Nurses:

- Holistic care
- Nursing identity
- Patient comes first
- Personal experiences of care
- Personal standards
- Personal preferences
- What is nursing
- Why you are a nurse

System:

- Government/ commissioning
- Ethics
- Evidence
- Legal issues
- Nursing organisations
- Policies, protocols, procedures
- Safety of staff
- Standards
- Targets

Demand:

Patients:

- Complex needs
- Social issues

Nurses:

- Multiple priorities
- Nurses who do not work hard

System:

- Financial pressures

Capacity:

Nurses:

- Confidence in practice
- Expertise
- Leadership
- Power as nurses
- Prepared for care
- Scope of practice
- Skill mix
- Work experience

System:

- Equipment
- Physical environment
- Resources
- Staffing

Adaptations/ Work-As-Done:

Nurses:

- Adapting care
- Circle of control
- Hierarchy of care
- Interruptions
- Perspective on care
- Routine care
- What nurses do
- Work arounds
- Trade offs
- Cutting corners
- Work is not like education

System:

- Capacity building
- Changing practice
- Changing roles
- Community services (vs. hospital)

22 Appendix N: Publication Plan

The publications planned for this thesis are as follows:

Meta-narrative review of nursing labour (Chapter 2)	Manuscript nearing submission Target journal: International Journal of Nursing Studies
Scoping review of work-as-imagined and work-as-done (Chapter 3) and CARE model findings (Chapter 6)	Manuscript drafted Target journal: Safety Science
Report of video game creation and evaluation (Chapter 4)	**Jackson, J**., Iacovides, J., Duncan, M., Alders, M., Maben, J., & Anderson, J. (2020). Operationalizing resilient healthcare concepts through a serious video game for clinicians. *Applied Ergonomics*, *87*, 103112, 10.1016/j.apergo.2020.103112
Nursing work model (Chapter 6)	Manuscript drafted Target journal: The British Medical Journal
Digital methods (Chapter 5)	**Jackson, J.** (under review). Using digital tools in qualitative research for participant recruitment and data collection. *International Journal of Qualitative Methods.*